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INDEX PAGE 21

The OIL WEEKLY

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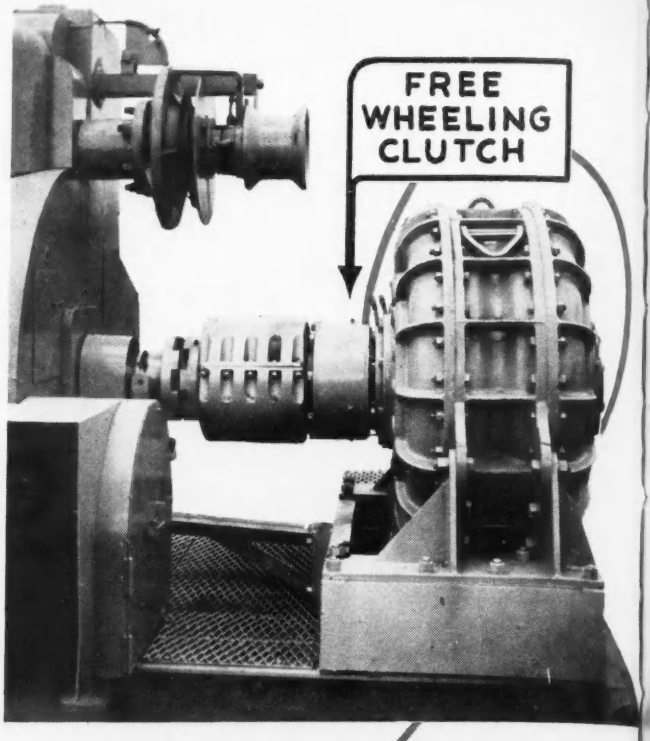

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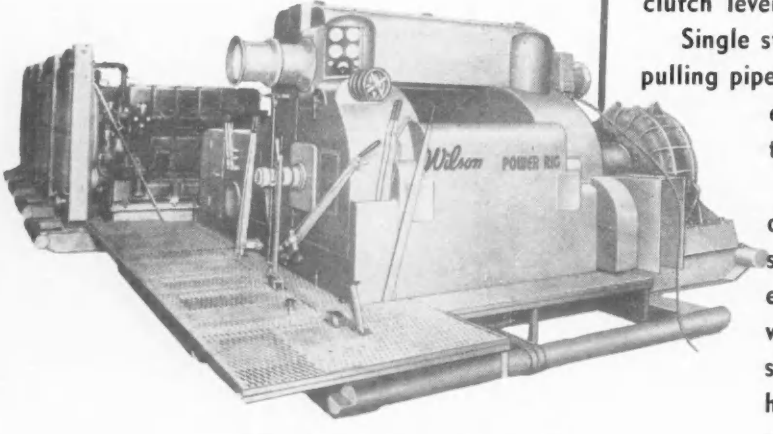

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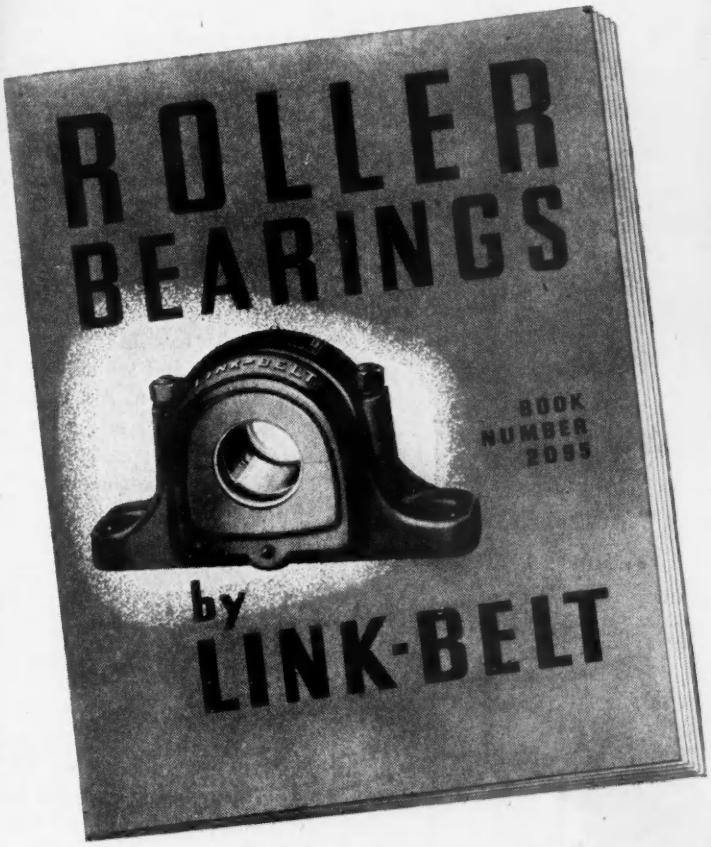

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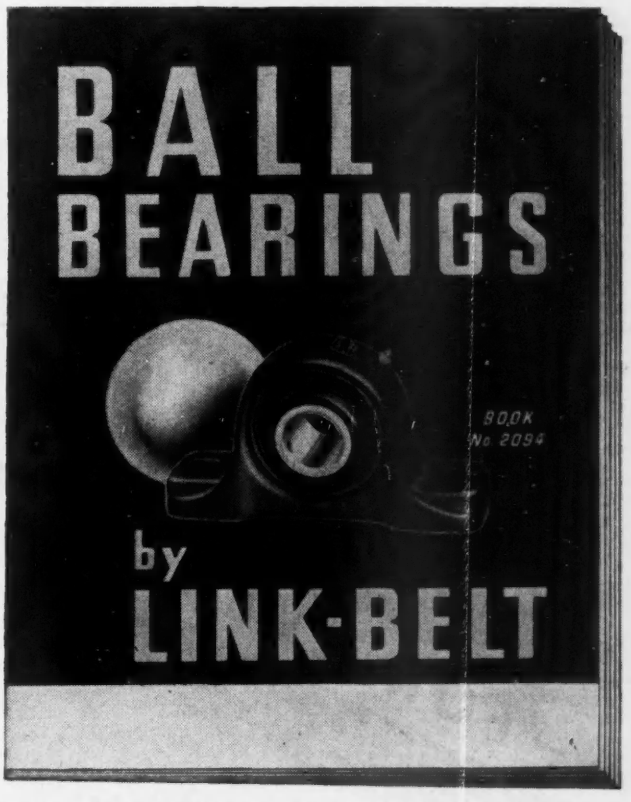

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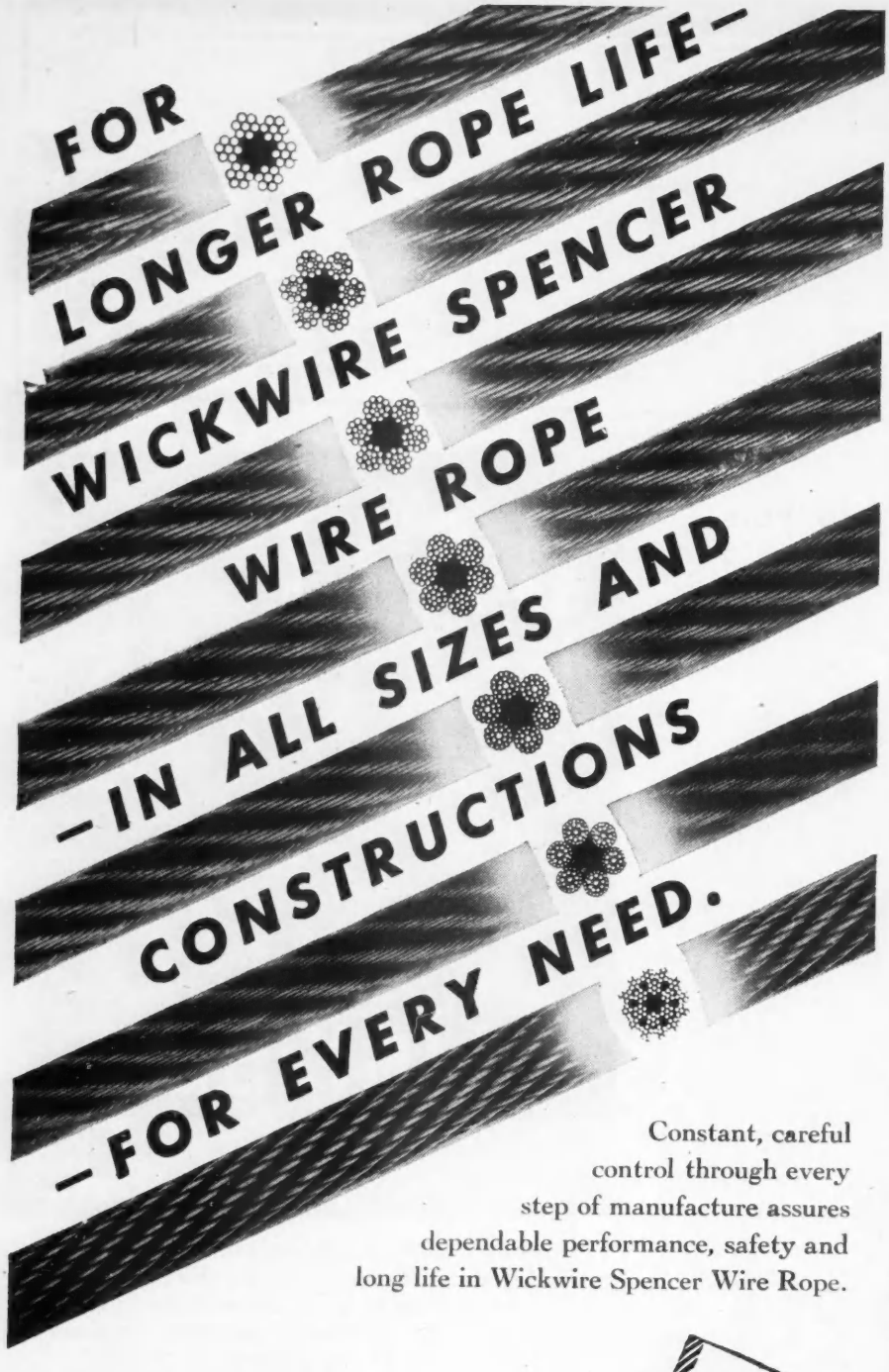

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Looking Ahead

WITH THE EDITOR

IN RECENT days you have heard many estimates on what the consumption of petroleum products will be during 1947—how much the demand will be for crude oil. These estimates have come from governmental agencies, state and federal, and from private sources.

In the YEARBOOK-FORECAST issue of THE OIL WEEKLY, to be published February 10, will appear an analysis of all forecasts on demand, involving all data possible to assemble, and presented in a manner which will give you, the reader, the conclusions at a glance.

As a part of the forecast there will be presented estimates on drilling and prospective footage by areas for 1947, compared with the actual wells and footage of 1946. The work necessary to this and other phases of our forecasts, has been under way for some time and will involve confidential information from the budgets of hundreds of oil companies.

The YEARBOOK-FORECAST issue will contain so many valuable features to *anyone* engaged in the business that you will want to preserve your copy, as thousands of others have done, for reference all during the coming year. Remember the date—February 10.

The gradual development of the gas industry in West Virginia, together with its ups and downs, will be reviewed in next week's issue of THE OIL WEEKLY by David B. Reger, consulting geologist, in "Expanding Frontiers of Natural Gas in West Virginia." He describes the increasing discovery of gas in new formations, and gives some important geological information relating to gas reservoirs.

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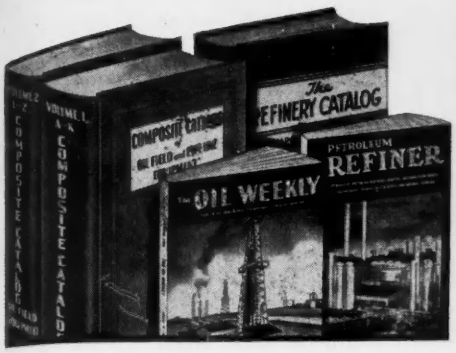

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The OIL WEEKLY

ENGINEERING NEWS STATISTICS

R. L. DUDLEY, President, Publisher A. L. BURNS, General Manager

Contents

JANUARY 13, 1947

VOLUME 124, No. 7

Technical and Feature Articles

LINER JOB WELL-REMEDIAL WORK IN THE EAST TEXAS FIELD 32
By D. W. Akins, Jr.

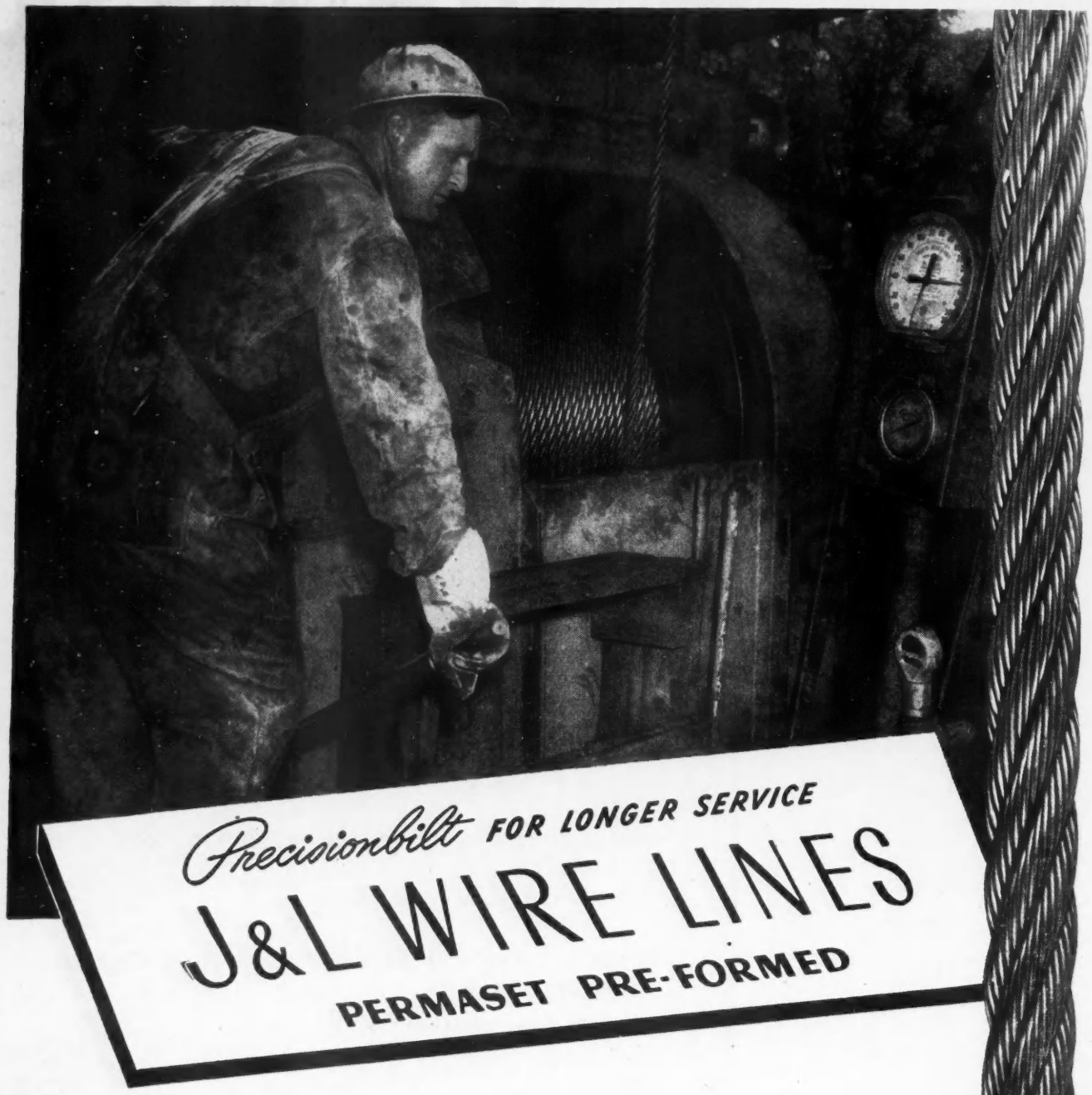
FUNDAMENTALS OF INDUSTRIAL ACCIDENT PREVENTION, PART 14-B 38
By C. L. Hightower

POWER DISTRIBUTION SYSTEMS FOR OIL FIELD PUMPING SERVICE, PART 3 46
By W. C. Bloomquist and J. N. Poore

DRILLING HINTS 62

News and Departments

LOOKING AHEAD 2
THE OUTLOOK 23
THE CHANGING PANORAMA 25
THE WEEK'S NEWS 26
CRUDE PRODUCTION 29
PIPE LINE NEWS 30
INTERNATIONAL NEWS 31
NEW EQUIPMENT, LITERATURE 57
PATENT ROUNDUP 61
MARKET TRENDS 66
FIELD OPERATIONS 67
EXPLORATORY COMPLETIONS 80
SQUEAKS FROM THE BULL WHEEL 83
MEN IN THE INDUSTRY NEWS 84
THE OIL MAN'S CALENDAR 85
MANUFACTURERS' NOTES 87
ADVERTISERS' INDEX 88



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Unionization Threat Hangs Over Engineers

LABOR unions are making strides in bringing engineers and technicians into their fold. About 70 such affiliates now are active in the United States and Canada. Unions are spending millions to expand membership in this field. Although to date membership is composed largely of young engineers, apprentice technicians, and sub-professional engineers, the effects of unionization will be far-reaching if it becomes widespread. Ultimately, they would envelop the professional-level engineers, and consequently stand as a threat to the engineering profession.

Unionization of engineers is undesirable as it would govern his output and impede his standing. The job of engineering is that of creative thinking, working out difficulties and managing. These duties cannot be performed if the services of engineers are limited and regulated to the pace of the poorest. The result would be to reduce engineers to the position of a tradesman or craftsman. Engineers' opportunities for advancement to top management ranks, now very favorable, would be limited drastically.

The movement is a threat to management. It will make the engineer, on whom management places great responsibilities, subservient to unions. Furthermore, it marks a broadening of the union field to the point of encompassing all employes right up to management's threshold.

Registration by states and by the National Society of Professional Engineers counteracts to a degree the threat of unionization, but it does not take care of that group to which the union organizer directs his most effective appeal, viz., the sub-engineer, the apprentice engineer, the engineer helper and others below registration rating who are trying to work their way up to a professional standing. Organization of these groups by CIO or AFL affiliates are, in some instances, being forestalled by forming independent units which subsequently gain separate recognition from NLRB. Although this constitutes regimentation too, it is preferable to affiliation with national unions in that it gives engineers a chance to conduct their own affairs. Anything that counteracts unionization by AFL or CIO affiliates is better than nothing.

The whole matter is a question of great import to both engineers and management. Immediate and full consideration of all phases of both groups is needed now—before affiliated national unionization gets a hold that will be stangling.

Gas Price Fixing A Ticklish Question

THE question of whether a state agency has the right to fix the price of natural gas is a ticklish one and the decision of Oklahoma courts, which have been asked to rule on the matter, is awaited by the public and the gas industry alike because of its future implications.

In a precedent-making decision recently the Oklahoma Corporation Commission decreed that gas produced in the Texas County sector of the Guymon-Hugoton gas field should not be bought at less than 7 cents per thousand. Following this order the Kansas Corporation Commission announced that if the order was upheld it would take similar action in its sector of the gas field. Other states probably would follow suit.

The price-fixing order, which the commission declared was based on conservation rather than economic grounds, resulted when Peerless Oil & Gas Company asked the commission to compel Cities Service Company to take gas from two of its Hugoton wells. During 17 days of testimony the hearing developed much more than was originally intended and at its conclusion the commission found that the prevailing price of 4 cents per thousand was too low and constituted a waste of a valuable resource.

The issue, as pointed out, is a ticklish one. On the one hand the commission is determined to protect the state's gas resources but certainly does not wish to become involved in a knock-down-and-drag-out fight over prices. On the other hand the natural gas companies, already plagued by arbitrary rulings on prices and services by the Federal Power Commission, are determined to fight any attempt by a government agency to assume price-fixing powers. Natural gas companies want to conserve gas because this is the very foundation of their existence. (See article, Page 26.)

The present court battle may be the signal for an all-out battle—government versus private industry, as well as economic conservation versus operating conservation. Or it may be the means of bringing conflicting interests together and solving a problem which will result in real conservation, just prices and lasting service to the consuming public.

Neat Presentation

DIRECTORS of Humble Oil & Refining Company are introduced to employes and stockholders in a very interesting and excellent fashion in the latest issue of *The Humble Way*, Company house organ.

A biographical sketch tells the duties, business experience and achievements of each director. An interesting point is that every director of the company has risen through its ranks after actually doing the work he now directs. Especially noteworthy are the accompanying photographs. Each director is pictured, not in the usual formal pose, but in an informal pose while at work.

Other firms who contemplate introducing their directors might benefit from *The Humble Way*.

THE WEEK'S NEWS

INDUSTRY observers see nothing concrete in President Truman's allusion to our vanishing natural resources, and view it as just something thrown into his annual message in a horizontal approach which blanketed everything but clearly outlined little.

FPC Powers Broadened—A Supreme Court order may turn out to be the stepping stone for an attempt by the Federal Power Commission to bring gas-selling oil producers under its control. Natural gas interests are expected to appeal to Congress for clarification of the Natural Gas Act to prevent misinterpretations by the FPC. Page 28.

Bureau's January Forecast—The Bureau of Mines is looking to the industry to reduce refinery operations so as to achieve a better balance of refined oil inventories, forecasting that demand for domestic oil this month will be 37,000 barrels under the December estimate. Page 29.

Gas Price Fixing Before Court—Generally higher rates for natural gas in all producing areas may follow if the Oklahoma Supreme Court affirms the contended right of the state commission to raise field prices to prevent economic waste. Story below.

Senate Special Oil Committee—Senator Ed Moore of Oklahoma seeks continuation of the Senate Special Petroleum Committee as liaison between the executive departments and Congress. Page 27.

Near East Oil Deal—A French company has filed suit in an effort to block the deal whereby American companies acquired considerable production in the Near East. Page 31.

Big Inch Sale Proposal—Pennsylvania's fight against conversion of the Big Inch pipe lines to gas has been opened b Representative Walter with a resolution to delay dispos until six months after FPC files its report on its natural-ga investigation. Page 30.

Value of 1946 Production—Bureau of Mines estimates 194 output of crude worth $2440 million at the well, with increased prices offsetting a one-percent drop in over-all demand. Page 28.

More Oil Tax Revenue—Treasury tax estimates forecast steady expansion of petroleum consumption through next 18 months, anticipating $591 million revenue from the three federal taxes in the fiscal year 1948. Page 29.

Oil and the Budget—President Truman's annual budget calls for healthy increases in funds for petroleum activities of the Interior Department, but makes no provision for exploration of the Continental Shelf or further money for investigation of the Naval Petroleum Reserve in Alaska. Geological Survey funds would be almost doubled whereas the Bureau of Mines would get only a small increase. The Department of Justice's anti-trust division is down for a considerably larger appropriation.

Bonds Posted As Important Gas Price Case Is Appealed to Oklahoma Court

The Oklahoma Corporation Commission on January 6 fixed a supersedeas bond of $250,000 for Cities Service Gas Company, in that company's appeal from a Commission order which fixed the price of natural gas at 7 cents a thousand cubic feet, in the Guymon-Hugoton field of Texas County. Producers' bonds would be as follows: Republic Natural Gas Company, $40,000; Southwest Public Service Company, $4000; Cabot Carbon Company, $64,000; Phillips Petroleum Company, $50,000; Harrington & Marsh, $10,000; J. L. McCormick, $3000 and William Kane, $2000.

The commission was told by producers they did not desire to continue producing gas until their positions were definitely fixed under the order. Redford Bond, chairman of the commission, replied that the commission holds the order covers the entire field and all purchasers and operators, and will require bonds so the case may be appealed.

The commission's order is far-reaching, in that it is the first time a state regulatory commission sought to fix prices for natural resources. Cities Service and other purchasers have maintained the commission does not have price-fixing authority, but the commission has maintained from the start that it does possess such powers.

The difference between the 4-cent and the new 7-cent price, on the basis of the runs from the field would be $203,126, the conservation department reported. Of this amount $25,390 would be due the royalty interests. Purchasers had nominated demand for the January period a total of 10,797,787,000 cubic feet.

Effects on Industry

Higher rates for natural gas all along the line are in prospect if the Oklahoma court affirms the commission's ruling. Guymon field gas would jump from an average of 4 cents per 1000 cubic feet to 7 cents, with a reduction in the required pressure from 16.5 to 14.65 pounds per square inch.

Cities Service seeks to test the asserted authority of the commission to prevent "economic waste," but the gas industry as a whole, it was represented by industry spokesmen in Washington, are not opposed to higher prices for gas, which would benefit land and royalty owners, always provided that compensatory readjustments in rates are made by the utility commissions of the consuming states and the Federal Power Commission.

The Louisiana and Oklahoma commissions contend they have the authority to prevent economic waste of gas and it is expected, if the Oklahoma ruling is sustained, authorities in Texas, Kansas and other producing states likely will seek similar statutes.

Validation of the order on the Guymon field would probably be followed by corresponding increases in the prices of gas from other fields, making it necessary for the interstate gas companies to seek readjustment of their rates from the FPC.

With the issue thus presented, the FPC would have a ready-made opportunity for a review of the over-all profits of the companies.

Industry officials point out that they are already confronted with sharply increased labor and material costs and with higher gas prices, a problem of considerable magnitude would develop.

(See Panorama discussion, page 25.)

Western Oil and Gas Group Again Elects Ralph B. Lloyd

Ralph B. Lloyd, president of Lloyd Corporation, Ltd., has been re-elected president of Western Oil and Gas Association, Los Angeles, for a sixth consecutive term.

Others elected: William Reinhardt, Union Pacific Railroad, first vice president; H. D. Collier, Standard Oil Company of California, second vice president; L. K. Whitter, Beldridge Oil Company, treasurer; Don E. Gilman, executive vice president; D. S. Kilgour, secretary; John M. Peirce, economist; and George F. Prussing, technical secretary.

"Steady Supply of Oil"

At least 30 well-known domestic crudes are suitable for the production of jet propulsion fuels and a steady supply of oil is assured when the need arises, the U. S. Bureau of Mines disclosed last week in its annual report.

During the six fiscal years ended June 30, last, more than 434,190 mcf of helium were produced and more than half of last year's production of 63,403,345 cubic feet were turned back into the underground reservoir in the Cliffside field near Amarillo, Texas, it was revealed.

IPAA Only Oil Group to Talk on Reciprocal Pacts

Only one petroleum group, the Independent Petroleum Association of America, has applied for permission to submit testimony on the proposed 18-nations reciprocal trade agreement at the hearings of the committee for reciprocity information which will open January 13.

The question of the imports excise taxes on petroleum will be taken up by the committee January 17, with Russell B. Brown, general counsel of the IPAA, scheduled to appear. Brown previously filed a brief strongly opposing any further cut in the taxes, which already have been reduced 50 percent in prewar trade agreements, and urging that they be restored to their statutory level.

API Production Group Meeting Commitees Named

Committee chairmen have been named for the annual spring meeting of the California District of the American Petroleum Institute, May 15-16 at Los Angeles, M. W. Morris, chairman of API's Division of Production of the West Coast, has announced.

General chairman of the two-day affair is E. V. Watts of General Petroleum Company. Committee chairmen include Paul Andrews, Signal Oil Company, production; R. E. Foss, Barnsdall Oil Company, drilling; and C. W. Reichert, National Supply Company, arrangements.

Land Office Changes

Thomas C. Havell, former supervisor of the branch of adjudication in the (federal) General Land Office, has been named chief of the branch of adjudication in the new Bureau of Land Management, and Albert C. Horton, Jr., also of the General Land Office, has been appointed chief of the branch of engineering and construction.

Arthur D. Kidder, leading cadastral engineer in the department, compiler of the Standard Field Tables and The Ephemeris, has retired after 45 years of service in the General Land Office.

Up Gas Allowable

Permission to produce, for the remainder of January, 60 million cubic feet of gas daily in excess of the current schedule allowable assigned to its connections in the Carthage field, Panola County, Texas, has been granted Lone Star Gas Company in an emergency order issued by the Texas Railroad Commission. Unseasonably cold weather was the reason assigned.

Baxterville Price Cut

A reduction of 16 cents per barrel for crude purchased in the Baxterville field, Mississippi, has been announced by the Gulf Refining Company, Gulf Crude Oil Purchasing Division.

The new price, effective January 3, is $1 per barrel as compared with a previous posting of $1.16 per barrel.

Moore Strong for Continuation of Senate Oil Investigation Committee

Continuation of the Senate Special Oil Committee, formerly headed by Senator Joseph C. O'Mahoney of Wyoming, is planned by Senator Ed Moore of Oklahoma, who as previously ranking Republican member would head the group. A resolution to continue the committee through the Eightieth Congress was introduced January 8 by Senators Wayne Morse of Oregon and Owen Brewster of Maine.

With the revamping of committees under the Congressional Reorganization Act the make-up of the group would be changed to consist of three members each from the Committee on Foreign Relations, Interstate and Foreign Commerce and Public Lands, and two members of the Senate to be selected by the presiding officer.

Similarly, continuation of the oil subcommittee of the House Interstate and Foreign Commerce Committee also is expected to be sought, with Representative Charles A. Wolverton of New Jersey as its chairman.

Expressing the belief that the committee should be made a permanent agency of the Senate, Moore pointed out that oil questions are involved in public and government lands which have been acquired through foreclosure, and that the Agriculture Department and land grant banks have retained oil and mineral rights to the lands they held, all of which, he said, gives the government a "tremendous toehold" in oil interests which he holds is not a good thing for the industry.

Moore declared the government should not engage in industry to make money and should divest itself of these and similarly acquired oil and gas interests.

Moore has in mind a number of inquiries if the committee is re-created, including recent activities of Standard Oil Company (New Jersey) and Socony-Vacuum Oil Company in acquiring an interest in the Arabian American Oil Company, and obtaining more oil from Iranian sources, negotiation of which was announced from London last month.

He is also strongly interested in, but does not favor, the pending Anglo-American petroleum agreement, and wants a thorough study of it before the Senate acts on ratification to insure that it does not lay the groundwork for some type of federal or international control of domestic oil operations.

Another investigation which many members would like to see conducted concerns the reciprocal trade agreement being arranged by the State Department with 18 nations.

On January 8, Moore, together with Senators William F. Knowland of California and Pat McCarran of Nevada, introduced a joint resolution to settle title in the states and prevent further clouding of such titles. Similar resolutions were simultaneously introduced in the House by Representatives F. Edward Hebert of Louisiana and Carl Hinshaw of California.

Among the early bills was one by Representatives Mundt of South Dakota to provide for water-pollution control.

Patent Descriptions Are Offered Citizens of U. S.

The Department of Justice has announced that the Office of Alien Property will sell to American citizens publications containing 4000 pages summarizing 37,000 mechanical-electrical patents seized from enemy nationals. The price of the complete set of abstracts is $10.

Abstracts on patent and patent applications on oil prospecting and drilling include:

Class	Description	Price
33	Geometrical instruments	$0.25
73	Measuring and testing	.25
77	Boring and drilling	.10
102	Ammunition and explosive devices	.10
103	Pumps	.25
164	Cutting and punching sheets and bars	.10
166	Wells	.10
172	Electricity, motive power	.25
252	Compositions	.10
294	Handling, hand and hoist-line implements	.10

Other classes of interest are: 195-Mineral oils; 230-Gas pumps and fans; 138-Pipes and tubular conduits; 285-Pipe joints or couplings; 251-Valves; 286-Packed shaft or rod joints; 183-Gas separation; 169-Fire extinguishers; 261-Gas and liquid contact apparatus. The price of abstracts of patents in these classes is 10 cents per class except class 261 which is 25 cents.

Strata, Not Adam Smith

Bennett Frank Buie, professor of geology, University of South Carolina, has called to THE OIL WEEKLY's attention a mistake made in an article on paleontology appearing in the December 16 issue.

Buie points out that "it would appear that the English civil engineer referred to (in the article) is William Smith, not Adam Smith. William (Strata) Smith, born in 1769, is generally credited with being the first person to recognize the possibility of distinguishing and correlating strata on the basis of their fossil content. This beginning of the science of stratigraphy occurred shortly before 1800, not 'over two centuries ago.'"

The editor appreciates Professor Buie's pointing out the discrepancy.

Distinguished Lecture

Dr. S. W. Muller, professor of geology at Stanford University, Palo Alto, Calif., will lecture on "Permafrost and Engineering Problems" before the Houston Geological Society January 16 at the San Jacinto High School Building. The lecture is under the auspices of AAPG's distinguished lecture committee.

Failure to Review Interstate Gas Case Indicates Legislation Only Recourse

Petroleum operators selling the natural gas produced in connection with their oil face the possibility of Federal Power Commission control as a result of an order of the Supreme Court January 6, denying an application of Interstate Natural Gas Company, Inc., for review of a Fifth Circuit Court of Appeals decision, holding that the commission has the right to set the price for natural gas even though the original producer does not sell it in interstate commerce.

Under that order, the commission could regulate the price to be paid for natural gas produced in connection with oil, although there is no indication that the FPC has such action in mind. During the Circuit Court hearing, however, the FPC counsel refused to commit himself when asked whether the logical outcome of the commission's order was not that it could dictate price even to a man with a single well, selling his gas locally to an interstate distributor.

Questions Unsettled

Interstate operates a producing and gathering system in the Monroe gas field in Louisiana and sells the gas to others at stations within the state who in turn transport and deliver gas in other states. It contended that it was engaged solely in intrastate commerce. The FPC held in the order that sales of gas were in interstate commerce and the company was subject to its rate-making powers, under which it orders a reduction in the price.

The Supreme Court left unsettled several questions, including one as to whether Section 5 of the Natural Gas Act applies to sales within the state of production before delivery to points outside the state, and another as to whether the sales involved in the case transactions to which the act itself applies.

The court also refused a rehearing of the Cities Service case in which it affirmed the propriety of the commission's valuation of gas lands at their original cost rather than present value, for rate-making purposes.

The Independent Natural Gas Association was an intervenor in both cases, and a spokesman for the organization said that the Interstate decision apparently means that the industry's only hope for relief is through Congressional amendment of the Natural Gas Act.

Since the lower court decision was rendered last August many producers have been reluctant to continue selling their gas because of a fear that they might be brought under commission control.

Ferguson Comment

John A. Ferguson, executive director of the INGA, was skeptical that the FPC, despite repeated declarations by former Chairman Basil Manly that it did not seek jurisdiction over production and gathering, might not now change its mind.

"It may be contended that the FPC will not attempt to assert such jurisdiction in the case of the small producer," Ferguson commented, "but the fact remains that under the Interstate case ruling the FPC has taken the position that it has such authority, and no producer, no matter how small, can be assured that he will not some day be classed by the FPC as a natural gas company.

"I am confident the FPC cannot deny that if carried to its logical conclusion the law resulting from the ruling in the Interstate case would be applicable to the individual well producer. The commission is now faced with the position of either enforcing or ignoring the law.

"The only way the natural gas and oil industry can obtain positive insurance against FPC encroachment over matters over which Congress never intended them to take jurisdiction is to ask Congress to amend the Natural Gas Act in clear-cut language.

Circuit Court Upholds Principle of Unitization

The United States Circuit Court of Appeals at New Orleans has held that royalty owners may not refuse to cooperate with their lessees for their mutual protection in the adoption of the customary method of operation universally used in the field and at the same time demand damages. The decision was in a suit by Mrs. Virginia Y. Stott and others against Tide Water Associated Oil Company and Seaboard Oil Company of Delaware.

The plaintiffs refused to join in the unitization of the Long Lake field, Anderson County, Texas, and later brought suit against the companies for damages, claiming that wet gas under their land had been replaced by dry gas as a result of cycling operations.

The New Orleans court said the contention of such persons is unique and untenable and that any damages which they suffered are not chargeable to the lessees.

The defendant companies owned and operated leases covering some 2400 acres in the Long Lake field, including three tracts owned by the plaintiffs of about 200 acres.

Would Narrow the Range of Portal-to-Portal Causes

Legislation to outlaw suits for portal-to-portal pay, now totaling well over $2 billion, is expected to be based upon a bill introduced in the House of Representatives by John W. Gwynne of Iowa which would limit the jurisdiction of the courts in such suits to cases of willful violation and narrow their range.

Already filed or in preparation are suits against oil companies well over $30 million, and National Petroleum Association has warned its members that the industry faces a serious problem.

Oil Demand Drops, Values Show Gain, 1946 Over 1945

Crude petroleum produced in the United States last year had a value of $2440 million at the well, including the stripper-well subsidy, the Bureau of Mines estimated last week. Output for 1946 reached 1731 million barrels, an increase of 1.2 percent over 1945.

Total demand for all oils last year was estimated at 1927 million barrels, a drop of 1.3 percent from the 1952 million barrels in 1945, but all of the decline was in exports and domestic demand may have set a new high.

Stocks of all oils probably increased about 55 million barrels last year, indicating, the bureau said, that primary production and imports materially exceeded requirements.

Marketed production of natural gas increased about 4 percent last year, to 4040 billion cubic feet, with a total value at point of consumption of approximately $835 million.

Natural gasoline and cycle plants extracted about 4836 million gallons of liquid products from natural gas last year, or 3 percent more than in 1945. The value of all products at the plants, estimated at $186 million, was slightly below the 1945 total.

L. A. Nomads Elect

R. J. Eiche, export sales representative, has been elected president of the Los Angeles Chapter of Nomads, succeeding W. F. Bettis of M. O. Johnston Oil Field Service Corporation. Other officers elected are:

Fred C. Ripley, Ideco, vice president; B. M. Landis, Web Wilson Oil Tools, secretary; Waldo Moore, Cavins Company, treasurer; Lee Laird, Chiksan Company, sergeant-at-arms; J. A. Engstrand, Grant Oil Tool Company, assistant secretary; B. Reinhold, Abegg & Reinhold Company, assistant treasurer; Earle M. Boggess, Baker Oil Tools, deputy sergeant-at-arms.

T. Sutter of Baker Oil Tools and Bettis, retiring president, will serve as regents.

The chapter will hold its annual inaugural ball at the Los Angeles Biltmore February 15.

N. Y. Nomads Elect

Officers for 1947 have been elected by the New York Chapter of Nomads as follows: President, A. V. Simonson, manufacturers' export representative and Lufkin Foundry and Machine Company; vice president, E. M. Gretzler, National Supply Company; secretary, Norris L. Boulden, Jr., International General Electric Company, Inc.; assistant secretary, George P. Kenny, Thomas C. Wilson, Inc.; treasurer, Park B. Turner, Jones & Laughlin Steel Company; assistant treasurer, Joseph B. Roberts, Jr., Chain Belt Company; sergeant-at-arms, Myran J. Livingston, Arthur G. McKee & Company; deputy sergeant-at-arms, James G. Burnett, Heat Transfer Products, Inc., and regents, Val R. Wittich, manufacturers representative, and James W. Reed, Cooper-Bessemer Company.

Bureau Sees Demand Drop For Month Under December

Anticipating a moderate reduction of refinery operations pending a seasonal readjustment of unbalanced refined oil inventories and a clarification of the trends in export and domestic demand, the Bureau of Mines last week forecast that a domestic crude production of 4,640,000 barrels daily would be required this month, a reduction of 37,000 barrels from December estimate.

Stocks of refined oils amounted to 288,000,000 barrels at October's end, and while a small decline is indicated in November and a sharp drop expected in December, inventories at the end of the year still were heavy and out of balance, particularly light fuel oil stocks.

As THE OIL WEEKLY reported last week, the bureau expects that last-quarter demand for all oils may be more than 1 percent over its forecast of 498 million barrels, as a result of abnormal movement from primary storage to distributors in anticipation of increased freight rates and a larger than anticipated increase in demand for motor fuel as a result of mild weather, a shortage in rail transport facilities and a larger-than-estimated number of motor vehicles in operation. Total demand for motor fuel in the last quarter is seen as exceeding by 3 percent the previous forecast of 192 million barrels.

The bureau forecast reductions in seven states and increases in two, jumping Mississippi from 60,000 to 62,000 barrels and Colorado from 32,000 to 33,000 barrels, Texas was cut from 2,050,000 to 2,030,000 barrels daily, Oklahoma from 380,000 to 375,000 barrels, Kansas from 263,000 to 260,000 barrels; California, 845,000 to 838,000 barrels; Illinois, 210,000 to 209,000 barrels; Wyoming, 96,000 to 93,000 barrels, and Kentucky, 29,000 to 28,000 barrels.

Rates of production in all other states remained unchanged, Louisiana at 382,000 barrels; New Mexico, 98,000; Arkansas, 76,000; Michigan, 46,000; Pennsylvania, 35,000; Montana, 24,000; Indiana, 19,000; New York, 13,200; West Virginia, 8400; Ohio, 7600; Nebraska, 800, and other, 2000.

Union Oil May Abolish Its Drilling Department

Rumors on the West Coast are that Union Oil Company is abolishing its drilling department and will contract all of its drilling in California after February 1. The company is said to be disposing of its drilling facilities to a newly organized concern, Santa Fe Drilling Company, composed of former Union Oil employes. Union, however, will have no subsidiary interest in the new company which will be headed, it is understood, by Joe Robinson, former Union Oil drilling superintendent.

Union Oil Company has been running about 20 strings of tools in California.

Problems Face Texas Rail Body at Statewide Hearing

Speculation on the Texas Railroad Commission's next statewide proration hearing, scheduled January 15 in Austin, has been overshadowed by a bitter struggle over proposed revisions to the allocation formula for the Wasson field of Gaines County. Operators likely will ask for more oil in February, but that, since the winter demand has reached its probable peak, the commission probably will refuse to increase allowables over January.

American Liberty Oil Company is almost sure to make a strong bid for more oil since, according to company officials, its Texas City refinery was closed down recently because January allowables did not provide adequate working stocks.

Federal Group Working on International Trade Policy

Policies followed by various federal agencies in handling of international trade problems are being correlated by an Interdepartmental Committee with a view to having in writing a clear-cut set of definitions which all can follow.

The committee is headed by John A. Loftus, chief of the State Department Petroleum Division, and includes oil experts of the Commerce, Interior, Navy and War Departments and the Tariff Commission.

The same committee also is compiling the petroleum laws that discriminate against American nationals, which may be taken up through the proposed international trade organizations, and those most favorable to their foreign operations.

Crude Oil Production in the United States

(Estimates compiled by THE OIL WEEKLY. All figures indicate daily averages in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED Jan. 11	Jan. 4
Alabama	1,150	1,050
Arkansas	73,500	74,000
California	887,400	883,100
Colorado	37,800	38,200
Florida	240	255
Illinois	194,700	197,000
Indiana	17,500	18,000
Kansas	189,900	260,500
Kentucky	29,800	30,200
Louisiana	408,125	406,400
North Louisiana	94,500	93,400
South Louisiana	313,625	313,000
Michigan	42,000	42,750
Mississippi	89,500	85,000
Missouri	100	100
Montana	21,600	23,000
Nebraska	500	700
New Mexico	103,500	103,200
New York	13,750	13,200
Ohio	7,900	7,900
Oklahoma	355,800	364,350
Pennsylvania	36,250	34,500
Tennessee	35	35
Texas	1,931,615	1,974,850
Tex. R. R. Comm. Districts:		
Dist. 1—S. Central	19,085	18,950
Dist. 2—Lower Gulf Coast	133,110	134,050
Dist. 3—Upper Gulf Coast	412,175	418,125
Dist. 4—S. West	206,525	207,825
Dist. 5—E. Central	33,700	34,200
Dist. 6—E. Texas Field	301,000	309,600
Dist. 6—Rest of N. East	99,435	99,400
Dist. 7-B—W. Central	34,000	34,300
Dist. 7-C—West	27,585	27,550
Dist. 8—West	464,725	491,250
Dist. 9—N. Central	118,225	118,100
Dist. 10—Panhandle	82,050	81,500
West Virginia	7,600	7,200
Wyoming	100,000	103,750
Total United States	4,550,265	4,669,240

Total stocks, foreign and domestic, January 4, as reported by the Bureau of Mines were 223,291,000 barrels.

Thirteen Million Gain in Crude Imports for 11 Months

A jump of more than 13 million barrels in crude imports during the first eleven months of 1946 as compared with the corresponding period of 1945 is disclosed by the Department of Commerce. Receipts of refined products increased something less than 7.5 million barrels.

Total crude entries during the period were 80,688,000 barrels against 67,337,000 barrels while product imports were 43,721,000 barrels against 36,250,000 barrels.

Venezuela and The Netherlands West Indies accounted for the bulk of the receipts, the former shipping in 70,659,000 barrels against 57,605,000 in 1945 and the latter 38,169,000 barrels against 33,616,000. Receipts from Colombia were 9,220,000 barrels against 7,885,000, and from Mexico 5,735,000 barrels against 3,254,000. Imports from Trinidad and Tobago dropped to 45,000 from 777,000 barrels. Entries from all other sources were 581,000 barrels against 450,000 barrels.

Federal Revenue from Oil Expected to Show Increase

Tabulations accompanying President Truman's budget message show that the return from the three oil taxes—gasoline, lubricating oils and pipe-line transportation—is expected during the current fiscal year to exceed that of fiscal 1946, with 1948 in turn to exceed 1947.

It is estimated that the gasoline tax will return $444 million during the coming fiscal year, compared with $405,694,551 in the year ended June 30, last, and will jump to $486 million in fiscal 1948.

The 1947 return from the lubricating oils levy is placed at $81,500,000, against $74,601,713 in 1946, with a total of $89 million expected for 1948. Pipe-line transportation is expected to pay $15.5 million, against $14,823,532 in 1946, and increase to $15.9 million in 1948.

Suppliers Association Lists Convention Dates

The annual membership meeting of the Petroleum Equipment Suppliers Association will be held at the Mark Hopkins Hotel, San Francisco, May 4-7, H. R. Safford, Jr., executive secretary, has announced. Registration is planned May 4, whereas business and social activities will fill the other three days.

Correction

A mechanical error resulted in the garbling of the first paragraph of G. R. Adams' article, "Velocity Sizing of Water Lines," in the January 6 issue of THE OIL WEEKLY, page 28.

The paragraph should have read as follows:

Velocity sizing of water lines is a quick and economical method of correctly determining piping needs inside plant yards for the necessary coolers, condensers, and service water connections.

Would Wait on FPC Report Before Selling Big Inches

A joint resolution introduced by Representative F. E. Walter of Pennsylvania would prohibit the War Assets Administration from disposing of the Big Inch pipe lines until six months after the filing of the natural-gas investigation report and recommendations of the Federal Power Commission.

Since the measure must be approved by both houses within 30 days in order to forestall sales of the lines under the report filed by Administrator Littlejohn, there is little likelihood that Walter will get anywhere.

The FPC is making slow progress on its report on the natural gas investigation, and it likely will not be filed with Congress before March. Under Walter's resolution, if approved, disposal of the lines accordingly would be held up until September, unless before the end of the session in midsummer, Congress enacted legislation laying down a policy for the handling of the lines.

There are no indications that the report will contain anything which would give Walter comfort in his fight to prevent conversion of the Big Inches to gas, and it is expected the commission's recommendations will be conservative and more in line with Republican thinking than with New Deal objectives.

There is a possibility that Congress may hold up disposal of the lines under the latest WAA policy of permitting their use for either oil, gas or both, but there are no indications so far that this will be done.

Dismissal Hearing Soon On Mid-Continent Project

Hearing of argument on motions by Cities Service Gas Company and Northern Natural Gas Company for dismissal of the application of Mid-Continent Gas Transmission Company for authority to construct a 400-mile double pipe line from Liberal, Kan., to Kansas City, Mo., and a single 436-mile line to the vicinity of St. Paul, has been postponed by FPC from January 15 to January 22.

The two companies are contesting the Mid-Continent application because the proposed lines would go into markets in their areas. Cities Service has an application pending for a 405-mile line from the Hugoton gas field in Kansas and an increase in compressor capacity, and Northern Natural has requested approval of the construction of various facilities including additional compressor capacity and loop lines to increase its delivery capacity to 407,000 Mfc daily.

Michigan-Wisconsin Case Declared Reopened by FPC

The FPC has reopened the Michigan-Wisconsin Pipe Line Company case, involving the construction of a natural gas line from Texas to Michigan and Wisconsin (THE OIL WEEKLY, January 6), and on January 15 will receive further evidence with respect to the competition to be offered by the new line to existing business of Panhandle-Eastern Pipe Line Company in Detroit and Ann Arbor, Mich.

The order authorizing Michigan-Wisconsin to build a pipe line into its territory is being contested by Panhandle, which has petitioned for a re-opening of the entire case.

Monterrey Firm Announces High-Pressure Line Plans

Gas Industrial de Monterrey, S.A., has announced that construction on a new high-pressure natural gas pipe line from the international boundary opposite Roma, Texas, to Monterrey, Mexico, is scheduled to start soon.

The proposed line will move gas received from Reynosa Pipe Line Company which was authorized in December to build a 30-mile 12-inch natural gas line from the La Blanca field, Hidalgo County, Texas, through the North and South Weslaco fields to the north bank of the Rio Grande River. Earlier FPC authorized Reynosa to export to Mexico up to 50 million cubic feet of natural gas daily.

Capacity of the new Mexican line will be 80 million cubic feet of gas daily, the 30 million cubic feet over the authorized 50 million probably coming from fields in northern Mexico.

The new Mexican line will parallel a 140-mile existing low-pressure line that receives approximately 30 million cubic feet of natural gas daily from United Gas Pipe Line Company.

Humble Line Planned

Humble Pipe Line Company is contemplating building a 43-mile 6-inch crude oil pipe line from the Pittsburg field, East Texas, to its Longview station. Capacity of the line will be approximately 10,000 barrels and plans call for a pump station to be erected at Pittsburg. The line will move crude gathered by Humble Oil & Refining Company in the New Hope-Pickton-Pittsburg area to Humble Pipe Line Company's crude transmission line. Humble's production in these fields is presently being handled by Gulf Refining Company.

Gulf's Jackson Pasture Interest Sold to McCarthy

McCarthy Oil & Gas Corporation has purchased Gulf Oil Corporation's interest in the Jackson Pasture gas-condensate field bordering Trinity Bay in Chambers County, Texas. The transaction involved leases on some 4500 acres, including the five producing wells in the field, which at present are shut in. Plans are being made to drill five additional tests in the bay on the west edge of the field. The estimated fluid reserve as of July, 1946, was a million barrels.

AIME Chapter

The East Texas Chapter, AIME, will meet January 14, 7 p.m., Kilgore Hotel, Kilgore, and will hear R. W. Stuart, Stanolind Oil & Gas Company, Fort Worth, on "Diamond Coring and Drilling in the Rangely Field."

Company Seeking to Loop Denver-Cheyenne Pipe Line

Wyoming Gas Company, distributors of natural gas to northern Colorado and southeastern Wyoming cities, has made application to FPC for permission to lay a 10- and 12-inch line from Denver to Cheyenne to loop the company's present line. The company hopes to start construction of the line by April 1 and have it completed by October 1, 1947. Gas supply for this system is from Colorado Interstate Gas Company's line from the Texas Panhandle, and this supply is to be increased by construction of a line from the Hugoton, Kansas, field during the coming year.

Hope Project OK'd

The FPC has authorized Hope Natural Gas Company to build 58 miles of 20-inch loop paralleling existing lines out of the Wyoming gas field in West Virginia. In addition Hope has been authorized to construct additional compressor capacity and other facilities at four compressor stations along the line. The new facilities, costing $4.6 million, will enable Hope to transport 29 million cubic feet daily of natural gas in addition to the 42 million cubic feet now being moved.

Officers Elected

George W. Herring, scout for Texas-New Mexico Pipe Line Company, Midland, has been elected president of the newly organized West Texas-New Mexico Pipe Line Scouts' Association. Frank D. Gardner, Sinclair Prairie Oil Company, crude purchasing division, and R. L. Denton, Magnolia Pipe Line Company, were chosen vice president and secretary, respectively. Denton will also serve as editor of the association's statistical reports.

New Pump Station

Stanolind Pipe Line Company has started construction of a 2000-horsepower pump station on its West Texas-Drumright, Okla., crude oil pipeline, at a point 2½ miles east of El Reno, Okla. The plant is scheduled to be in operation by March 1, and homes for workmen will be constructed near the site.

Oklahoma Gas & Electric Company, which will furnish the power for the new station, will build a substation at the site and will tap the company's power line between Oklahoma City and El Reno.

Grier Gets Medal

For saving a fellow worker's life, L. F. Grier, welding foreman for Texas-New Mexico Pipe Line Company, was awarded the National Safety Council President's Medal at a dinner in Houston January 6. By administering artificial respiration, Grier saved the life of W. S. Barrett, employe of Texas-New Mexico Pipe Line Company who was overcome by gas while working on a company project near San Marcos, Texas, July 1, 1946.

Nationalization of Oil Industry In Yugoslavia

Petroleum activities in Yugoslavia are now naturalized, with the effect on private interests still obscure.

Before the war the principal private firms that had participated in petroleum exploration activities included Standard Oil Company (New Jersey) which operated through the Yugoslav Petroleum Exploration Company and the Pannonia and Medjumursko Petrolejsko Companies. The Shell and Standard-Vacuum interests operated refining plants at Sisak and Bosnanska Brod on the Save which had an aggregate throughput capacity of 1,400,000 barrels yearly.

No figures have been released for current Yugoslav production but it is reported that drilling is in progress in the Medjumurje region of northwest Yugoslavia, and in Bosnia. Before the war Yugoslav production was small, the only field being in the Peklenco-Selencia district, northeast of Zagreb where production was about 600 barrels a day from Devonian strata at depths of 4000 to 4200 feet. There is also a small gas field in the Bujavica-Kutina area, southeast of Zagreb.

Springhill 4 Test Runs High, Reports Indicate

Although still lacking official confirmation, reports indicate that Chilean Corporacion de Fomento de la Produccion's Springhill 4, latest test in the Tierra del Fuego region of Chile is running much lower than hoped. Near the top of the producing formation correlation apparently showed the well to be running a few feet lower than the other wells, but actual top of sand was not picked up until some 65 or 70 feet lower on structure than the No. 1 well. Electric logging has indicated showings at some levels, however, and it is likely that casing will be set for tests.

Trinidad Oil Production
(In Barrels)

COMPANY	October	November
Kern Oil Company	43,181	42,842
Trinidad Central Oilfields	43,023	44,348
United British Oilfields	397,254	478,826
Trinidad Pet. Development	243,154	232,651
Trinidad Leaseholds	550,971	530,722
Total	1,277,583	1,329,389

French Company Would Block Near East Deal on Basis of "Red Line" Agreement

Negotiations between Standard Oil Company (New Jersey), Socony-Vacuum Oil Company, and Arabian American Oil Company have been challenged by Compagnie Francaise des Petroles, according to press reports from Paris.

The French government-controlled company charges that any agreement entered into by any of the four major co-owners of the Iraq Petroleum Company independently of the others is a violation of the "Red Line Agreement," and that, backed by the government, the company would use all legal means at its disposal to "obtain satisfaction," the report said.

The agreement, first made in 1911, and reaffirmed in 1928, states that any crude oil production arrangements made by any of the four co-owners in the area of the old Turkish Empire, and delineated by a red line on a map, would be for the account of all four. Compagnie Francaise claims it had not even been informed about the current deal.

Compagnie Francaise des Petroles late last week started legal proceedings in London, Iraq Petroleum being a British company.

Information available in the United States is that the only part of recent Middle East negotiations affected will be the deal between Arabian American Oil Company with Socony and Standard since the crude oil involved in the purchase from Anglo Iranian Oil Company ostensibly is to come from Iran which is outside the Red Line.

British counsel for the American companies involved hold that the Red Line agreement was voided by wartime circumstances and doubt that validity of the French claims can be established.

The French government will have to convince the English courts that the Red Line agreement of 1928 is still valid before the State Department in Washington will accept any protest against the recent deals.

That, in effect, is what Under Secretary of State Will Clayton is reported to have told French Ambassador Henri Bonnet last week when the latter delivered their protest.

The company officials disclosed that the two transactions whereby it will obtain an interest in Arabian American and purchase substantial quantities of crude from Anglo-Iranian, were discussed with State Department and other government officials in advance of their consummation.

Both the British and French governments have a direct interest in the companies operating in the Middle East, whereas the Washington government, of course, does not. The French, however, insist that the United States government is involved because it intervened in the negotiations of the 1928 agreement.

Peruvian Government Sees Oil Rush to Jungle Lands

Anticipating an oil rush to the vast jungle backlands at the headquarters of the Amazon, where geologists believe there may be large petroleum reserves, the Peruvian government has asked technicians of the Inter-American Cooperative Food Production Service to investigate the opportunities for colonization and agricultural development along the navigable rivers of the area, according to a report to the State Department.

Peruvian officials reported that there already has been a sharp increase of agricultural activities in the vicinity of Yurimaguas in view of possible oil development work, and the proposed survey will cover principally the watershed of the Ucayali and Huallaga rivers, later possibly to be extended up the Maranon.

Whether oil is discovered in the area or not, the department report said, the studies will be of value to the government, which long has been planning for the colonization of the frontier area.

Wheeler, Reid Advanced

O. C. Wheeler has been named a vice president of International Petroleum Company, and Walter S. Reid elected a director of the company. Both have had South American experience, Wheeler having been director in charge of exploration and Reid has until recently been executive representative for International in Peru.

Lago-Creole Settlement

Attorneys for Standard Oil Company (New Jersey) and Lago Petroleum Corporation have agreed with attorneys for Creole Petroleum Company on a settlement of three civil actions by minority stockholders of the latter company arising from the August, 1943, consolidation of the Venezuelan assets of Lago and Creole.

By the terms of the settlement, Jersey Standard will return 750,000 shares of the 19,632,254 shares of Creole stock which Creole paid Lago for the transfer of all of Lago's Venezuelan assets to Creole.

Swedish Oil Discovery Official

It has been officially announced in a report to the Swedish government by the Swedish Institute for Geological Research that traces of oil have been found in a well drilled to 6230 feet at Hoellviken, Sweden. Hoellviken is in the Skaane region, near Malmo, in the southwest corner of the country. The drilling is being continued and hopes are entertained of a commercial accumulation of oil—the first in Sweden—being found.

Meanwhile, a delegation of Swedish shale experts has been visiting in Switzerland to discuss steps to be taken for the exploitation of the oil shale deposits of Western Switzerland. These deposits were discovered between 1941 and 1943 in the Porrentruy (Pruntrut) region of the Jura Mountains, and are believed to comprise some 5 million tons of commercially exploitable oil shale.

Liner Job Well-Remedial

IN THE EAST TEXAS FIELD

THE mechanism of the water drive of the East Texas field reservoir is understood generally by the operators in the field, and many have had experience in well remedial work of one kind or another. For years, west side operators have been attempting to shut off or reduce salt water production by the dump bailer method, bradenhead squeeze, drillable-retainer squeeze, removable-retainer squeeze, use of plastics or some other method.

Some of these jobs were satisfactory but many of them failed, sometimes for lack of knowledge of well conditions. The usual procedure when a well started making water was to obtain a sample of the water, titrate it, and if its chloride content was approximately that of Woodbine formation water, it was assumed to be coming from the bottom of the hole. If the electric log or core data indicated a shale break a few feet off bottom, the well was plugged back to that point and if the water was not shut off, it was said that the plug leaked.

Presented before the East Texas Chapter of the API, Division of Production, December 17, 1946.

That assumption may have been true in some cases. However, the chances are that in many cases this conclusion was not true because there are too many instances now a matter of record where pipeline oil production has been obtained from zones of porosity below zones already flooded or partially flooded with salt water.

It has been known since shortly after development of the field began that the producing sands are lenticular and that the permeable and impermeable beds do no conform to the bedding plane of the Austin chalk and other younger formations. Figure 1 is a schematic sketch showing a generalized west-east cross section of a part of the field. In the region of the East Texas field the Woodbine was thrust upward by the Sabine Uplift so that the beds dip toward the west. Then the upper part was peneplaned off before the beds above were laid down, and the sketch shows how the reservoir is made up of many small traps as a result of the alternate sand and shale lenses being truncated. The beds are much more complex than here illustrated. Actually, the sands are more or less continuous, while frequently the shales are not. As shown in the diagram, the thickness of the porous zones is not uniform. Permeabilities vary over a wide range, and it is not uncommon for one oil-bearing zone to have an average permeability 100 times greater than that of an adjoining zone. Some areas are drilled much more densely than others. Each of these factors has contributed to the uneven encroachment of salt water with the result that a single, level water table does not exist. Instead, there are many water levels and a well may penetrate several sand lenses already waterflooded and yet have undrilled zones below where salt water has not yet encroached. Figure 1 shows such a well having relatively small portions of its bore exposed to oil-bearing sands of two lenses. As a result this well would produce predominantly salt water. If the well were deepened through the next impermeable barrier it could be made to produce clean oil, provided the two upper zones were cased off.

The Ohio Oil Company's first liner job was attempted on the C. L. Graham

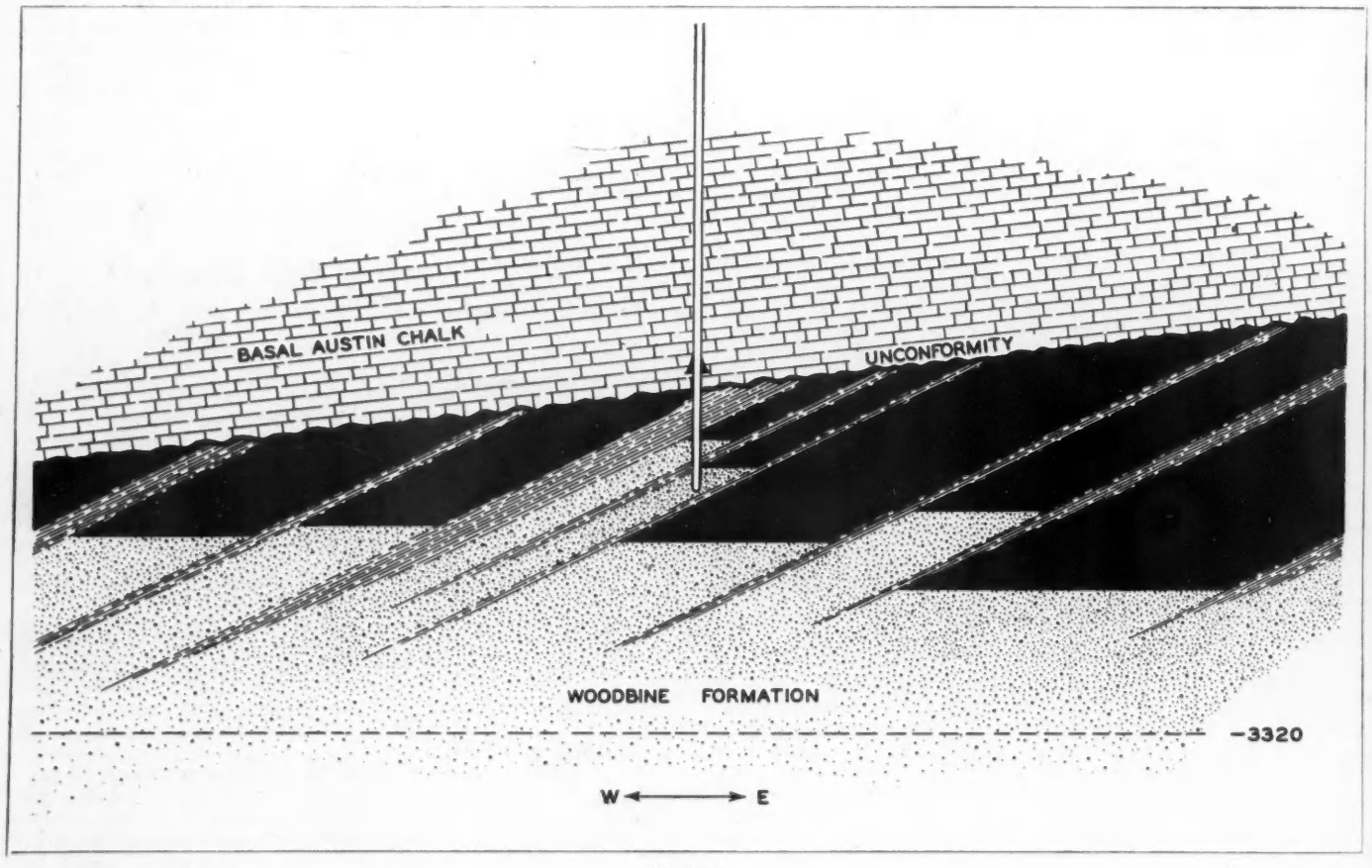


FIGURE 1

Work

By D. W. AKINS, JR.

a/c 2 lease near the northwest corner of the Cadena Survey. Water first appeared on this lease in December, 1943. During the next 13 months eight wells were plugged back to the top of the sand in the conventional manner by displacing cement down the tubing and drilling out with a small company workover rig. In four of these wells water was successfully shut off; in another it was reduced, but in the other three the water percentage was actually higher after workover than before. Oil production was increased in only one of the eight wells as a result of the plugbacks. All of these wells had been completed by setting casing in the base of the Austin chalk and drilling or coring to total depth, usually 3270 to 3290 feet sub-sea. In no case was a well completed in this manner below minus 3290 feet, as it was felt desirable to stay a safe distance above the water level, originally considered to be at —3320 feet. An offset to one of the wells worked over, however, had been drilled to —3329 feet and casing set through and perforated from —3298 to —3313 feet. This well was still producing pipeline oil through perforations more than 50 feet below the bottom of wells, which were producing copious quantities of salt water in the immediate vicinity.

It was natural to conclude that other wells could be made to produce clean oil if completed in this same zone. A well producing 96 precent salt water was selected for the experiment. This well had been completed originally with 7-inch casing set in the base of the chalk and drilled to a total depth of —3290 feet. Company workover tools were rigged up and the well deepened 30 feet using 6¼-inch rock bit on the 2½-inch external upset ends tubing pulled from the well. Clear water was used for circulating fluid, and cuttings were brought out using reverse circulation. Electric log was run and an attempt made to correlate cuttings with the survey. Figure 2 shows the electric log of the well. The normal resistance curve shows high values of resistivity opposite the sands in the old hole. Since the well was producing a high percentage of salt water, it was concluded that these high readings were due to invasion of the fresh water used as drilling fluid. The lateral curve shows low reading in all zones except for a hard streak at —3303 feet. The third curve, or long normal using a 6-foot spacing, is almost flat in all zones except at —3287 to —3293 feet. It will be noted that the electrode spacing is exactly the same as the thickness of this bed. In such cases the resistivity of the beds above and below have a great influence on the readings of a curve of this type, so that resistance values are recorded much lower than they actually are. Of course the low

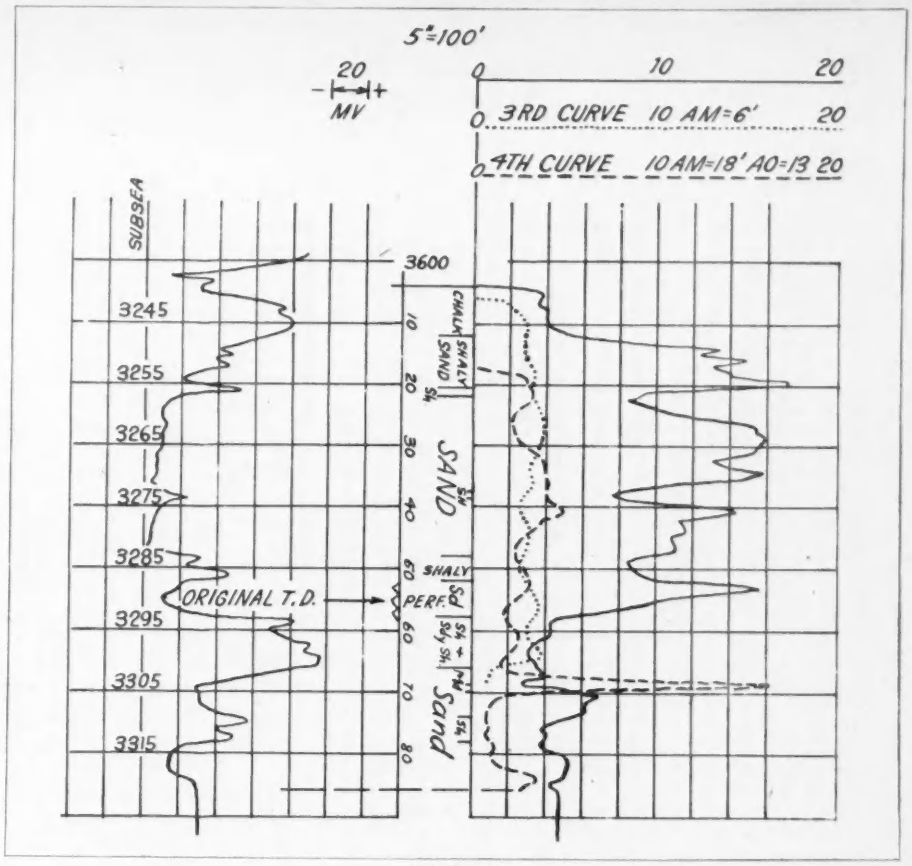
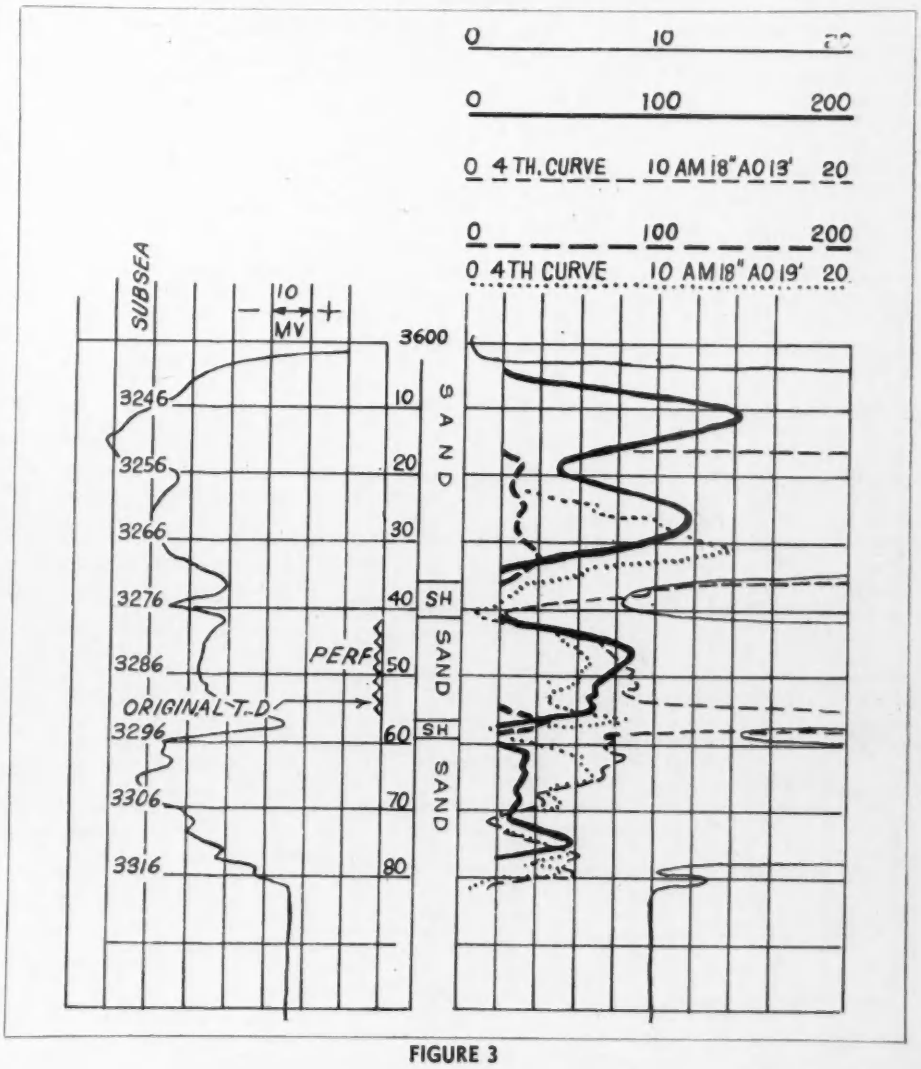


FIGURE 2



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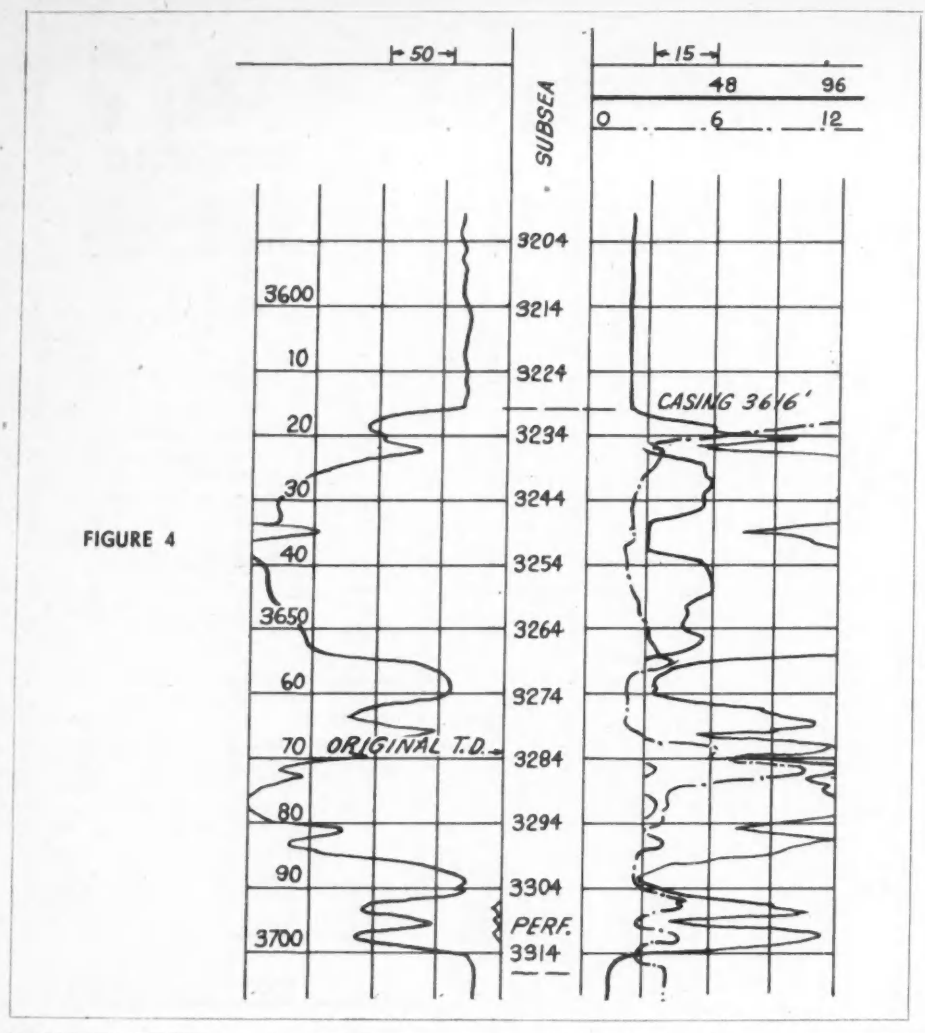

FIGURE 4

readings could also indicate the presence of salt water. The electric log did not hold much promise for the well. The cuttings, however, for the first three feet drilled were well saturated with oil. The next 11 feet were rather tight being mostly sandy shale, and below this depth the cuttings appeared to agree with the electric log in that all the the sand was water bearing. A five-inch outside diameter blank liner was set on bottom giving 55 feet overlap with the seven-inch casing. Fourteen sacks of cement were displaced down the tubing and out through a liner shoe equipped with a back-pressure valve. After 72-hours the liner was gun perforated with ten shots opposite the zone —3287 to —3292 feet. Tubing and rods were run and after pumping off the fresh water, the well made 32 barrels of oil with no salt water in the seven-hour test.

Production Increase

Production gradually increased to more than 60 barrels of clean oil in a seven-hour test. As a result of the workover the allowable of the well was increased from 6.90 barrels to 20 barrels. Total cost of the job was $1166.42. The increased production changed the classification of the well from marginal to proratable and therefore subject to shutdown days. With an average of 21 producing days per month and 40 cents per barrel lifting cost, the job paid out, after deducting royalty and direct taxes, in 5.36 months. This was considered a fair return on the expenditure. The same procedure was attempted on a second well on this lease with similar success. Since the allowable was 20 barrels prior to workover this well did not re-

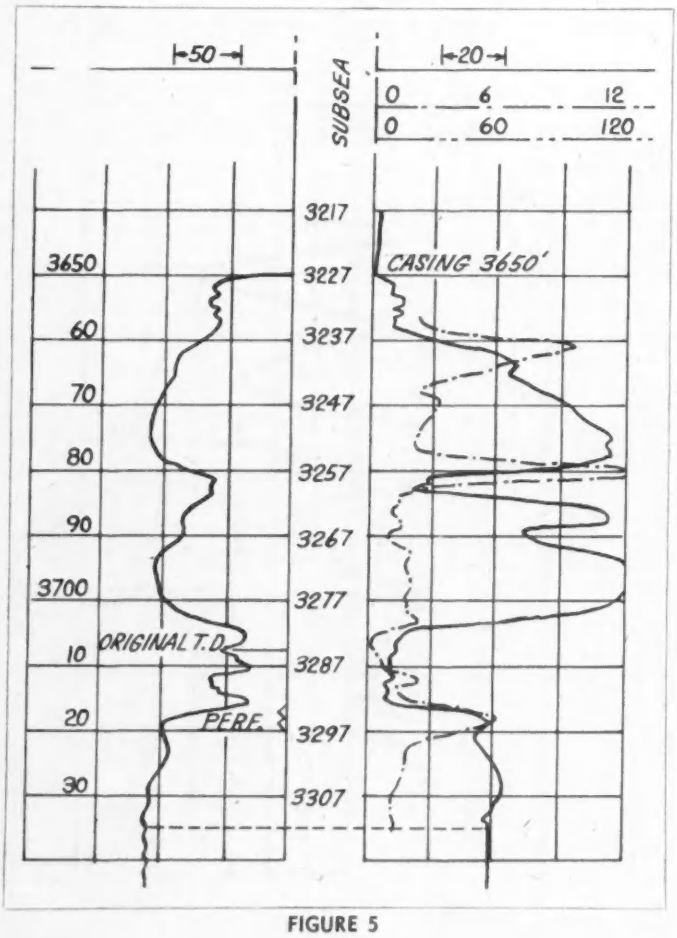

FIGURE 5

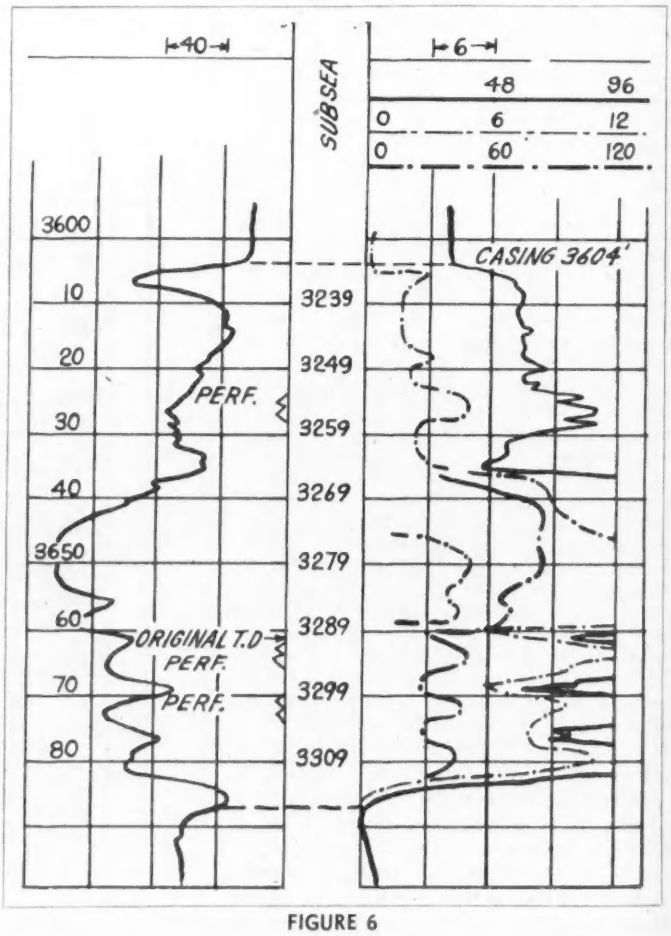

FIGURE 6

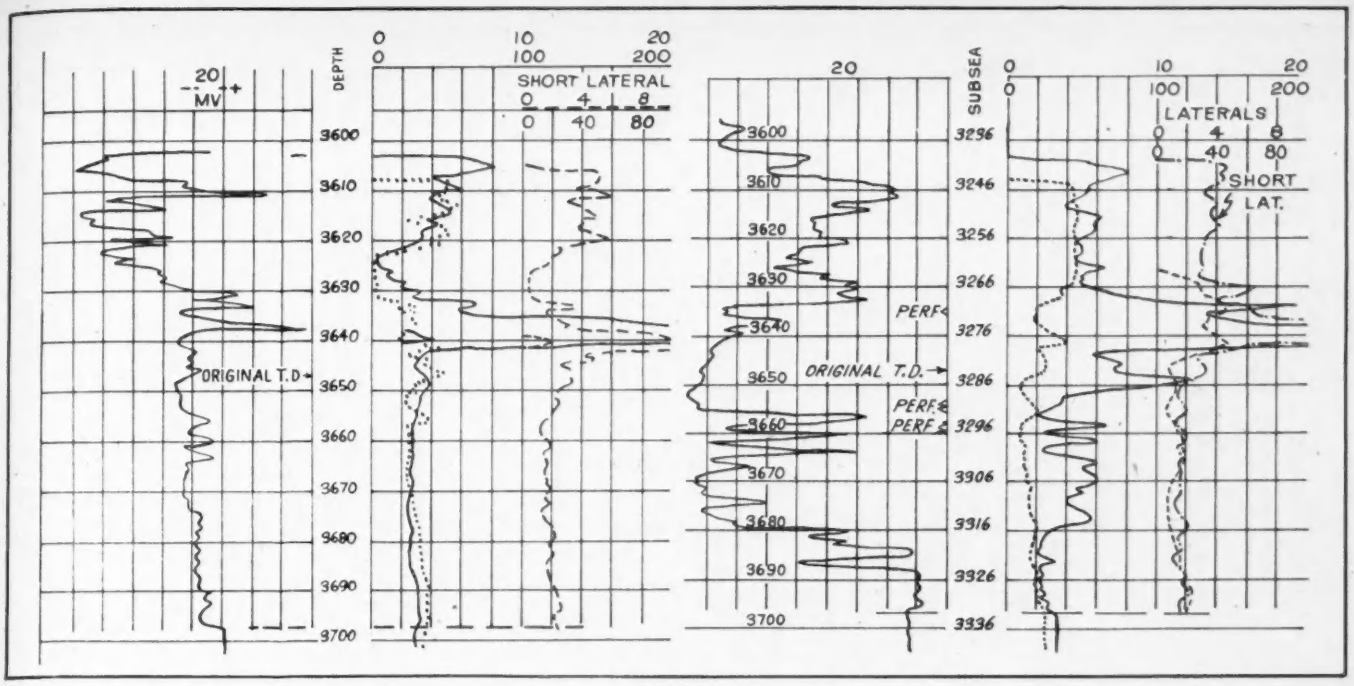

FIGURE 7

ceive a higher allowable, but water production was reduced from 80 percent to zero. Eleven liner jobs have been completed on this lease. Water production was shut off entirely and oil production increased in seven of the 11 wells. Water production was reduced in the other four.

After completion of the first few liner jobs the following procedure was set up. Rods and tubing are pulled. When these wells were drilled they were equipped with a liner which was shop-perforated for that portion which would be in open hole. In nearly all instances it has been possible to pull this liner with a releasing-type spear run in on tubing. In some cases, however, it is necessary to use cable tools in order to get it out. After pulling the liner the well is drilled about 40 feet deeper, using the tubing from the well with fresh water and reverse circulation. The kelly is marked off in two-foot lengths, and after drilling each two-foot section of the hole, circulation is continued from three to five minutes before beginning to drill the next two-foot section. In this way cuttings from each two feet of hole drilled are separated from those of the next two-foot section by a column of clear water. A record is kept of each section drilled. Electric log is then run and correlated with cuttings from the well. Usually four joints (approximately 120 feet) of five-inch outside diameter, 15-pound casing, with liner shoe, is run in the hole on a jay tool and set on bottom. Tubing is pulled and the jay tool replaced with a cup assembly and run back in the hole. The cups are seated in the shoe and circulation established behind the liner. Fifty sacks of slo-set cement are pumped down the tubing, followed by 16 barrels of water. This leaves about five barrels of cement in the tubing. Tubing is then raised, allowing the cement to equalize and fill the liner and extend on up into the casing.

Three thribbles (about 270 feet) are stood back in the derrick. The bradenhead is then packed off around the tubing and a squeeze is obtained by raising the pressure from 1000 to 1400 pounds. In no case are more than two barrels of cement displaced during the squeeze as it is desirable to leave cement between the liner and the seven-inch casing. The pressure is released after about five minutes and the cement inside the liner washed out with reverse circulation as tubing is lowered to within four or five feet of the shoe. After 72 hours waiting on cement the liner is perforated opposite the zone indicated by cuttings and electric log to hold the most promise.

Figure 3 is the electric log of a well originally bottomed at —3290 feet. The normal curve of this log shows the effect of fresh water invasion, as do all of these logs. The two lateral curves indicate fairly high values opposite the sand zones above —3292 feet. Liner was set and gun-perforated with 20 shots from —3278 to —3292 feet. Before workover the well produced 70 percent salt water. After workover it produced clean oil with the allowable remaining at 20 barrels. If this well had been plugged back in the conventional manner to the top of the sand it seems apparent that salt water production would not have been eliminated.

Figure 4 is the electric log of a well whose original total depth was —3283 feet, and which was producing 95 percent salt water before workover. The liner was perforated from —3306 to —3312 feet with 24 shots. As a result of the workover the allowable was increased from 5.52 barrels per day to 20 barrels per day. Water production was not shut off but it was reduced to 71 percent.

Figure 5 shows the electric log of a well which produced 89 percent salt water when bottomed at —3285 feet. After being recompleted by perforating the liner from —3293 to —3297 feet with 13 shots, water production was reduced to zero. Oil production remained at 20 barrels per day.

Figure 6 is the electric log of a well which was producing 98 percent salt water when bottomed at —3290 feet. After the liner was perforated from —3299 to —3303 feet it produced 100 percent salt water. This zone was squeezed and the liner perforated from —3291 to —3294 feet and the well produced 100 percent salt water from this zone also. These perforations were squeezed off, the tight zone from —3253 to —3257 feet was perforated, and the well again tested 100 percent salt water. When the well was deepened most of the cuttings were badly broken up and lost; it was felt that the sands were too porous and soft for recovery. The electric log indicated fairly high resistance readings for both curves at the zones tested.

The electric log companies have been very co-operative in trying to furnish surveys which could be more positively interpreted. They have helped by experimenting with various electrode spacings, by running check surveys against each other, and by taking sidewall cores, all at no cost to us. In two wells electric logs were furnished with the wells surveyed in oil and followed by the regular surveys in fresh water. The purpose of this was to try to obtain a log which would give better information as to the fluid content of the sands. From experience it was known that fresh water would displace the salt water so that high resistance reading would be obtained. It was felt that hole conditions would be disturbed less if the well were drilled deeper using oil instead of water. Figure 7 shows on the left the survey run in oil and on the right the one run in fresh water. The hole was deepened with oil, surveyed, and then the oil displaced with water and the hole resurveyed. The oil survey proved of no value in making better interpretation than the survey made in water. Two zones were perforated and tested separately below the original total depth, which was —3283 feet; both tested 100 percent salt water. After squeezing, the well was again perforated from —3270 to —3272 feet. Before workover the well was making 96 percent salt water with an allowable of 5.52 barrels per day. After workover the well tested approximately the same percentage of water with no change in oil allowable.

Another Comparison

Figure 8 shows another comparison between logs of a well surveyed in oil

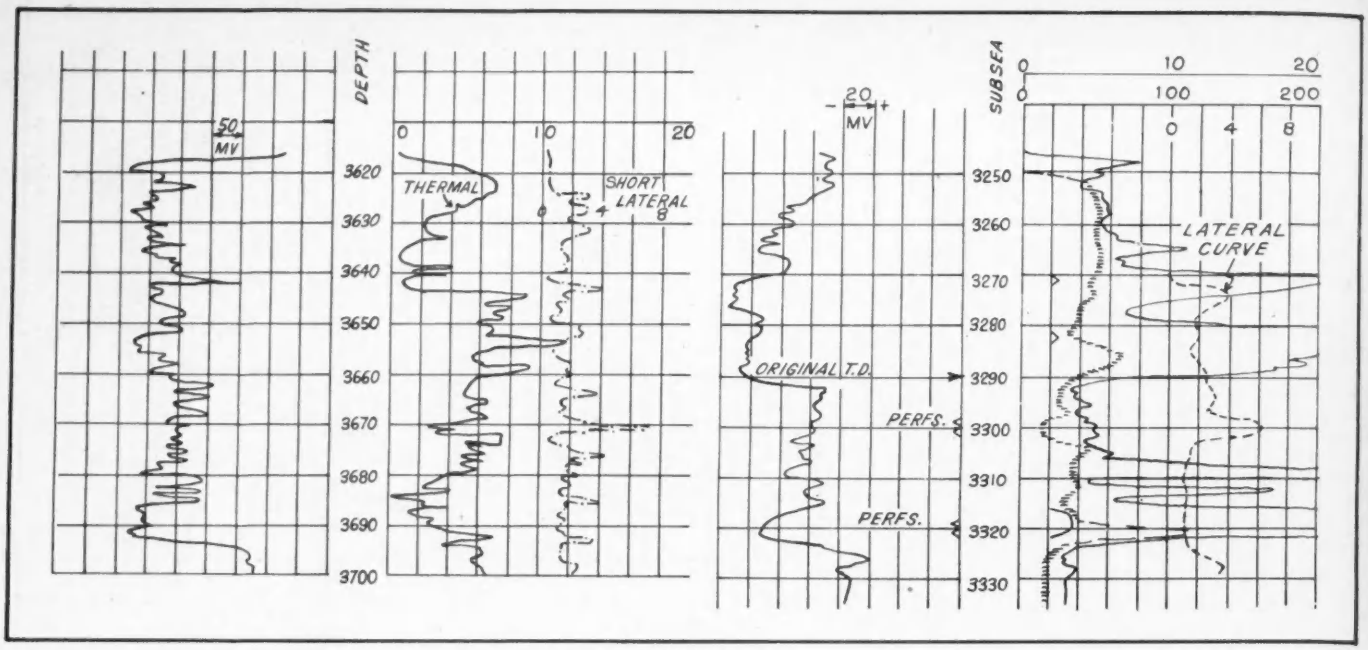

FIGURE 8

and in fresh water. The well was deepened with oil and the survey on the left obtained. After displacing the oil with fresh water the survey on the right was obtained. The original total depth was —3290 feet. Liner was set in the usual manner and perforated from —3318 to —3322 feet with 16 shots. The well produced a high percentage of salt water from this zone so the perforations were squeezed and the liner perforated from —3298 to —3302 feet with 10 shots. Before workover the well made 99 percent salt water with an allowable of 2.76 barrels per day. After recompletion the well produced 100 percent clean oil and its allowable was increased to 20 barrels per day.

Before attempting any kind of well remedial work the economics must be carefully considered. A detailed cost estimate of the job should be prepared and some kind of an estimate made of the amount of increased oil production which will probably result from the workover. If the cost is too high or the additional oil to be recovered is too small the job cannot pay out. There is no sure way to estimate accurately the amount of additional oil which the workover will yield. A shown by some of the foregoing examples the well may not be improved at all. When a liner job is being considered on a lease which has its water production history established, future oil production can be estimated from the production decline curve of those wells already gone to water. In the absence of such information the decline curve set up by the Texas Railroad Commission may be resorted to for making estimates. This curve is necessarily an average and it goes without saying that the well undergoing repairs may prove to be better or worse than the curve indicates. The operator doing work of this kind must consider the overall picture and average his successes with his failures in order to determine the economic soundness of his program. As far as decreasing water production is concerned, it is assumed for this purose that the net value of bonus oil allowable for water injected exactly equals the cost of disposal. The reduction of salt water production will result in certain benefits such as reduced wear and tear on lifting equipment, elimination of corrosion, reduction in treating cost, etc. These are difficult to evaluate, however, and most managements prefer to justify the expenditure on the basis of increased oil production only. Because of low per well allowables in the East Texas field, the rate of return on the expenditure is fixed within rather narrow limits.

Consider a liner job on a well whose production has declined to eight barrels per day. A typical cost estimate, based on Ohio's experience, is shown in the following tabulation:

	No.	Units	Cost
Labor	24	Man days	$ 260
Pulling Unit	48	Hours	120
Cleanout Tools	48	Hours	120
Trucking (1½ ton truck)	18	Hours	27
Trucking (2½ ton truck)	3	Hours	8
Liner	120	Feet	60
Cement	50	Sacks	48
Set Shoe	1	.....	35
Electric Log	1	.....	200
Cementing Service	1	.....	231
Perforating Cost	2	Jobs	332
Total	..	.....	$1441

If, after successful workover, the well is capable of producing 20 or more barrels of oil per day, its allowable in a 21-day producing month is 21/30 of 20, or 14 barrels per day. Since the well already had eight barrels' allowable, the operation must pay for itself from the six barrels additional allowable less royalty and direct taxes. Using these factors it can be shown that the expenditure will be returned in 7¼ months.

$$\$1441 = 6\ (.875)\ (\$1.70)\ X - 6\ (\$.40 + \$.07)\ X$$

$$X = 232 \text{ days or } 7.25 \text{ months}$$

Assuming that the well showed on test after workover to be capable of producing 30 barrels of oil per day it will have, according to the Railroad Commission's curve, approximately 28 months of production before reaching the abandonment stage of four barrels per day. Since it will require only 7¼ months to return the expenditure, the operation will have nearly 21 months additional production from which to show a profit. The job will be both an operational and economic success.

Assume that the job cost $6000. Using the same factors as in the example above it will require more than 32 months for the expenditure to be returned.

$$\$6000 = 6\ (.875)\ (\$1.70)\ X - 6\ (\$.40 + \$.07)\ X$$

$$X = 916 \text{ days or } 32.2 \text{ months}$$

Since the Railroad Commission's curve shows a 30-barrel well to have only 28 months productive life before abandonment, the job cannot pay out. In this case the workover would be an operational success but an economic failure. Some of the more expensive workovers will pay out when considered alone, but by the time a few failures are averaged in it is apparent that costly jobs must be avoided.

Major and independent operators have been interested in this type of remedial work for about two years. Considerable progress has been made but the present technique of recompleting wells in oil saturated zones below zones already flooded with salt water is far from satisfactory. It is impossible to correlate electric logs sufficiently to extrapolate into unworked areas even a short distance away. The sections are too broken and too short, as shown by the foregoing electric log examples. It would be of great value in this type of work if the electric log positively interpreted as to fluid content in these broken zones. As the field gets older and salt water encroaches farther east, the formations become more broken. Greater differences in water levels will exist and the operator will find the liner method a valuable approach to the problem of extending the life of his wells.

Grateful acknowledgment is made The Ohio Oil Company for permission to prepare this report and appreciation is expressed to the employes in the Shreveport Division and the East Texas District for their valuable assistance, and to Halliburton Oil Well Cementing Company and Schlumberger Well Surveying Corporation for their helpful cooperation.

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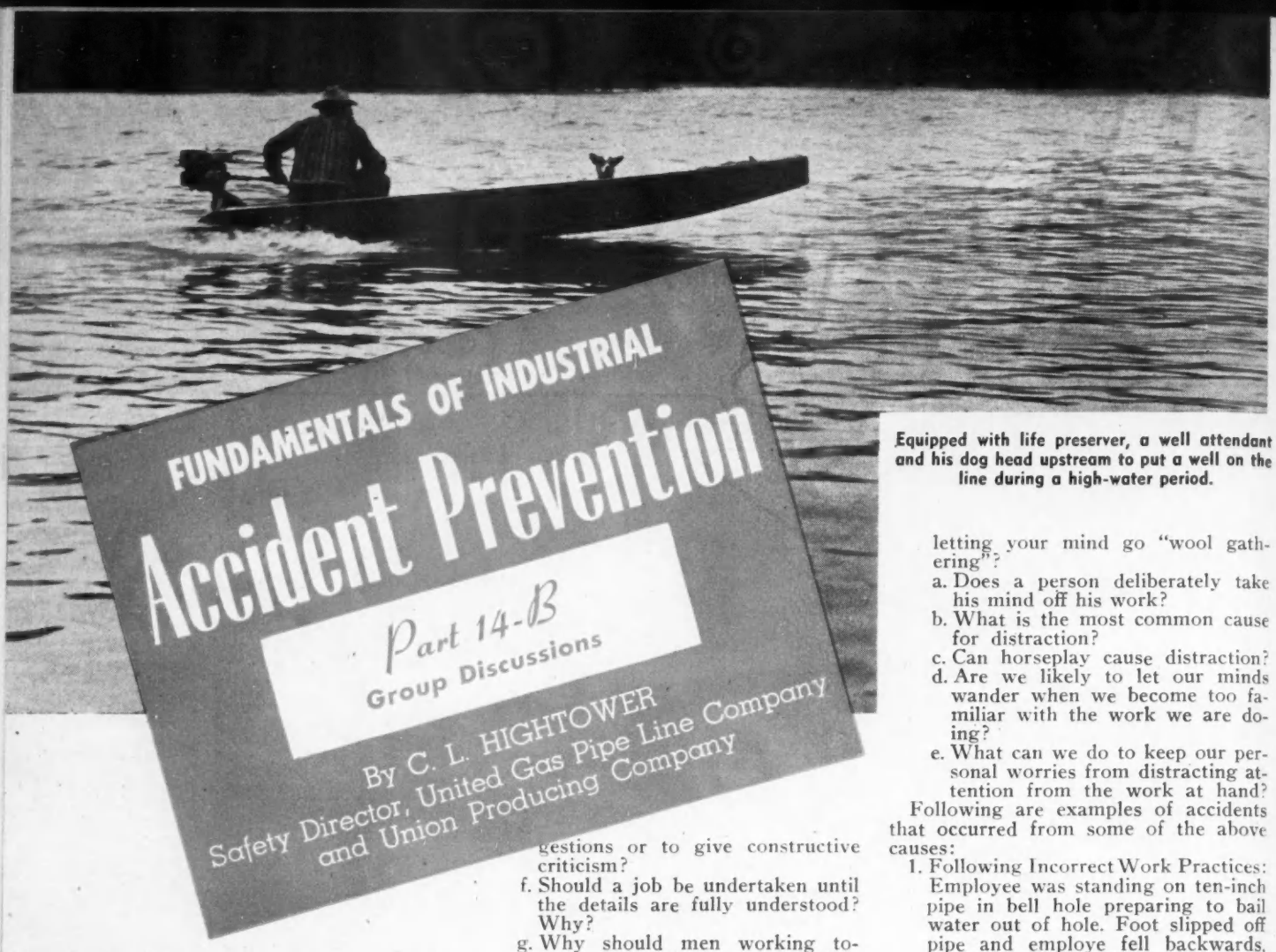


Equipped with life preserver, a well attendant and his dog head upstream to put a well on the line during a high-water period.

SAFETY AN INDIVIDUAL PROBLEM

IT IS seldom that physical equipment is dangerous in itself. It is, of course, important to keep a good house and to properly check and maintain equipment, tools and properties in order to have safe and efficient operations, but the point is that the man "misfires" and causes accidents more often than the tool or machine going "haywire."

Significance of this is that we must avoid taking unnecessary chances, learn the correct work practices for the jobs we are called upon to do, and keep our minds directed on the task at hand regardless of outside interferences.

A discussion of the following questions should bring out ways and means of accomplishing these results on our individual jobs:

1. What is meant by correct working practices?
   a. If a job is done right, is it done safely?
   b. What is the advantage of learning the right way in the beginning?
   c. Can old work practices become unsafe due to changes in conditions?
   d. What is the advantage of having an open mind?
   e. Should a person ever hesitate to offer suggestions or to give constructive criticism?
   f. Should a job be undertaken until the details are fully understood? Why?
   g. Why should men working together talk things over before tackling a new job or going into an unusual situation?
   h. How can an inexperienced or indifferent worker endanger his fellow workers?
2. What do we mean by taking an unnecessary chance?
   a. Is there a difference between speed and haste? What is the difference?
   b. Is there less likelihood of a man taking unnecessary chances working with somebody than if he were working alone? Why?
   c. Can you take chances and do an efficient job in a workmanlike manner?
3. What is meant by distraction, or letting your mind go "wool gathering"?
   a. Does a person deliberately take his mind off his work?
   b. What is the most common cause for distraction?
   c. Can horseplay cause distraction?
   d. Are we likely to let our minds wander when we become too familiar with the work we are doing?
   e. What can we do to keep our personal worries from distracting attention from the work at hand?

Following are examples of accidents that occurred from some of the above causes:

1. Following Incorrect Work Practices:
   Employee was standing on ten-inch pipe in bell hole preparing to bail water out of hole. Foot slipped off pipe and employe fell backwards, spraining muscle of shoulder when he tried to catch himself.
   a. What was done wrong?
   b. How could the accident have been avoided?
2. Taking Unnecessary Chances:
   While tapping out stud bolt holes on cylinder, high south wind blew cast iron particle in right eye.
   a. What was wrong in this case?
3. Distracted Attention:
   Injured was walking down pipe line right-of-way in a creek bottom when right foot caught in a vine, causing him to stumble and fall, striking the palm of right hand on sharp stick.
   a. How could this accident have been avoided?

THE outlines in this chapter are for the use of safety meeting chairmen and other speakers in developing general discussions on common accident problems with employe groups.

In some cases the answers to questions listed have been given. In others, the correct answers are obvious. The discussion leader should go over the outline thoroughly before the meeting and inform himself fully on the subject so that he may be prepared to give the correct answer to questions listed, or to answer additional questions that might be asked by the group.

Group discussion is one of the most effective means of insuring individual participation in safety meetings. In addition, it stimulates individual and group thinking and is far superior to the lecture method as a training medium. It can be used to advantage in all cases where the group is engaged in work of a similar nature.

Discussion outlines may be revised, rearranged or added to in order to adapt them to the specific interests or needs of the group.

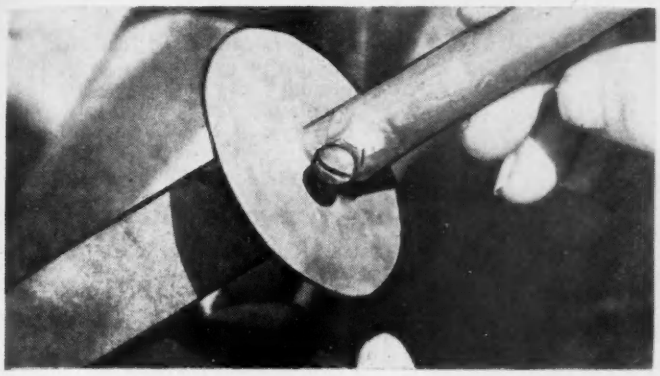
OFF-THE-JOB SAFETY

More people are seriously and fatally injured away from work than on the job. Off-the-job accidents occur in the home, on the streets and highways, and in public places such as parks, bathing beaches, theaters, night clubs and other amusement houses.

The home leads the parade in fatal injuries almost every year, with traffic running a close second. On the basis of the latest information available, the score is, in round figures:

Home	30,500
Traffic	27,800
Occupational	18,900
Public	15,500

With off-the-job acci-



File holder developed to prevent skinned knuckles and cut hands.

Tank batery on oil lease, showing good housekeeping practices and well-constructed stairways and hand rails.

dents accounting for almost four-fifths of all accidental deaths in the country, the need for greater interest and for more intensive effort to eliminate accident-causing conditions in the home, on the highway, and in public places is evident.

The National Safety Council sponsors a nation-wide program to carry the story of safety to every community and into every home. State and local safety councils are cooperating, but in the final analysis the success of the program depends on the individual citizen. You and I must concern ourselves with the problem and we must do our part by putting our individual program into effect. This individual program should include a close check of our own home from basement to attic and from the garage to the front gate to locate and remove accident-causing conditions; setting the example for safe conduct for the guidance of our children, neighbors and friends when we drive a car, go on a holiday outing, or work around the house and yard; carrying the safety message to as many individuals and groups as possible through our contacts with friends, neighbors, schools, clubs and fraternal organizations.

A discussion of the questions included in the following outline should prove beneficial to all of us in attacking off-the-job accidents:

1. Home Safety
   a. In what part of the home do most accidents occur?
   b. What are the most common causes of falls in the home?
   c. How can these hazards be corrected?
   d. What are the common causes of burns in the home?
   e. What can be done to guard against these hazards?
   f. What precautions should be taken in storing and dispensing medicines?
   g. Under what conditions should rat and similar poisons be kept around the house?
   h. What are the common causes of fires in the home, and how may these hazards be corrected?
   i. Is it safe to store gasoline around the premises or use it for cleaning purposes? Why?
   j. What precautions should be taken with firearms around the house?
   k. How can we safeguard children from accidents caused by knives, scissors, and other sharp objects?
   l. What good housekeeping practices are necessary to keep down fires in the home?
   m. What steps can you take to put these safe practice suggestions to work in your home?
2. Traffic Safety
   a. What is the most common cause of automobile accidents?
   b. Can you name the qualifications that go to make a good driver?
   c. At what age should a boy or girl be permitted to drive a car?
   d. Do grade or high school students in your community get any training in safe driving?
   e. How can you teach safe driving by example?
   f. What are the common causes of bicycle accidents?
   g. One of every three traffic deaths involves a pedestrian. What can the pedestrian do to guard against this danger?
   h. What can the automobile driver do?
   i. How would you go about teaching traffic safety to your children and other members of your family?
3. Public Safety
   a. Drowning is one of the most common types of public safety accidents. What precautions should the individual take to guard against this hazard?
   b. How should he prepare himself so that he can render assistance to a drowning person?
   c. What should children be told about flying kites?
   d. What should they be told about loose wires on the ground or hanging from telephone or electric poles?
   e. Is it advisable to tell children what to do in the event a fire breaks out in a theater or other public building? What would you tell them?
   f. Do you take the time to discuss these common public hazards with children or other members of your family?
   g. What is the best way to learn about these public dangers, and how can you pass the information on to your family, friends and neighbors?

It is not practical to divide safety into separate parts and use it when we desire, or when it is required. If we are to develop real safety consciousness and cultivate correct habits for work, rest, play and recreation, we must make safety a full-time job and put it to work wherever we are, on the job, on the highway, at play and in the home. Anything less is but half a loaf.

GUIDE POSTS TO GOOD HEALTH

Good health is dependent on many things, but mental and physical strain are the worst offenders and are responsible for health hazards. Worry, fatigue, anxiety and fear deplete our energy reserves and pave the way for physical and mental illness.

The important thing is to use our energy wisely with due regard for building up and maintaining our energy reserves.

Worry is the worst offender in the wastage of energy. There are many causes for worry, such as health, finances, family and personality. In addition to wasting energy, worry destroys cooperation, causes preoccupation and indecision, brings on fatigue, and promotes anxiety and fear.

Lack of sleep and rest uses our stored-up energy and prevents us from adding to that reserve when its gets low. This causes irritability and sluggishness, and makes us more susceptible to disease and infection.

Recreation is necessary in order to vary the monotony of our lives and to keep us from growing stale.

Food is important, because it is the power that releases energy. Overeating, improper food, and inadequate diet are dangers to be avoided.

Frequent medical checkups will prevent breakdowns and repair them in time if they do occur.

A discussion of the following points should prove helpful to all of us in in avoiding some of the more common health hazards:

1. Worry
   a. What are some of the common causes of worry?
   b. What are some of the things that worry does?
   c. What are the signs and symptoms of worry?
   d. Can most worries be cleared up or minimized?
   e. What is the difference between worrying about a problem and thinking out the solution?
   f. When should a man seek help or advice on problems that are causing him worry?
   g. Why is it important to think wholesome thoughts and realize that what we are doing is interesting and worthwhile?
2. Rest
   a. What benefits do we get from sleep?

Shelter on field truck to protect pipe line crew in bad weather.

b. How much sleep does the average adult require?
c. What should be done if a person has difficulty sleeping at night?
d. Does a late, heavy meal have any effect on our sleeping at night?
e. Is it possible to obtain rest through the day without going to sleep?
f. What is the best way to relax and take advantage of brief, daytime rest periods?

3. Recreation and Exercise
   a. What is meant by recreation?
   b. What are the principal advantages of recreation?
   c. Can a hobby such as woodworking, stamp collecting, etc., serve as helpful recreation?
   d. What precautions should be observed by the man past 45 in taking any kind of exercise?
4. Food
   a. What is the importance of regular meals?
   b. What important food should both children and adults have each day?
   c. Why do they recommend that people eat some leafy vegetables, fresh fruit or fruit juices each day?
   d. Are heavy meals and greasy foods suitable for warm weather?
   e. Why is it important to avoid worry or other disturbances at meal time?
5. Medical Checkups
   a. Can a fear of something wrong cause distress and suffering?
   b. How will a medical checkup relieve this distress?
   c. Why is it more important to get a medical checkup after we pass 45?
   d. How often should we see our doctor and dentist for these checkups?

Many of our troubles are either imaginary or greatly magnified and can be overcome or minimized by thinking them through and working out a solution. Thus by avoiding unnecessary worry, observing proper eating habits, getting sufficient sleep and rest, allotting some time to recreation and exercise, and getting a physical checkup at frequent intervals, we can promote better health and mental stability.

WHAT THE NEW MAN NEEDS TO KNOW

It requires the whole-hearted cooperation and continuous efforts of every single man in the crew to make a good safety record, but it only takes one man to break it. At a time when new men are coming into the organization this fact is significant. It means that if we want to keep our good safety record, we must do a thorough and speedy job of training the new man in safety and correct work procedure.

The supervisor can and does instruct the new man on many points, but new situations are constantly coming up, and the first warnings need to be repeated often so in the long run the experienced men in the crew can be of the greatest help in developing the new man as a safe worker.

It is not possible to anticipate and instruct the new man on everything that might happen, but there are certain known hazards and conditions that he needs to be told about. A discussion of what we should tell the new man about the following conditions and situations should better equip all of us to do our part in getting him started right.

What would you tell the new man about the following items?

1. How to lift.
2. Under what conditions goggles should be worn.
3. Getting on and off trucks.
4. Position to take when riding in trucks.
5. Smoking.
6. Using an upright ladder.
7. Using a crescent wrench.
8. Working with or around concrete.
9. Kind of shoes he should wear.
10. Clothing he should wear working around moving machinery.
11. How to go up and down stairway.
12. Dangers of sunstroke or heat exhaustion.
13. Handling pipe.
14. Standing under raised loads.
15. Straddling winch lines.
16. Cranking a gas engine by hand.
17. Horseplay.
18. Poison Ivy.
19. First aid.
20. Reporting of accidents.

CAUSES OF INDUSTRIAL ACCIDENTS

Most accidents have a combination of causes. Two or more things go wrong at the same time. For example, the chance-taker might get by using a defective wrench if he goes at the job cautiously, and the ladder he is standing on is in good shape and well secured. But what if there is a defective ladder rung, or the ladder is not placed at the right angle and improperly braced or secured? When the defective wrench slips off the nut, that fellow is pretty sure of a fall.

The remedy, of course, is to search out and remove all possible accident-causing conditions before starting the job.

In general, accident causes may be grouped under three major headings: unsafe working practices, mechanical causes, and personal causes. The more important practices and conditions falling under these classifications are listed below in the thought that a discussion of these accident making situations will be of assistance to all of us in "spotting" the hazards on our individual jobs:

1. Unsafe Working Practices
   a. Poor arrangement of loads and overloading trucks, racks and platforms.
   b. Using defective, worn or improper tools and equipment.
   c. Using tools and equipment improperly.
   d. Failure to use personal protective equipment.
   e. Working on moving machinery.
   f. Taking short cuts and unnecessary chances.
   g. Working with undue haste.
   h. Removing guards or making other safety devices inoperative.
2. Mechanical Causes
   a. Poor housekeeping.
   b. Unguarded or improperly guarded equipment.
   c. Improper installation of equipment and poor arrangement.
   d. Mechanical failure of pressure vessels, fly wheels, etc.
   e. Unsafe dress and apparel.
3. Personal Causes
   a. Indifferent attitude.
   b. Mind distracted by worry.
   c. Lack of knowledge or skill.
   d. Bodily defects.

A review of these causes cannot fail to impress upon all of us that safety is a full-time job demanding constant alertness, a thorough knowledge of the job, and coordinated effort between members of the crew.

HANDLING OBJECTS

About one out of every four occupational accidents reported occur in connection with handling objects. Sprains and strains, and broken and mashed hands, fingers, feet and toes were the most prominent types of injuries resulting from handling objects.

The hazards involved vary in accordance with the weight and size of the object and the method by which it is handled. Sprains and strains, and mashed

fingers and toes are more frequent when objects are moved by hand.

Regardless of the varying conditions under which objects are handled and the difference in size and type, certain precautions will apply in all cases. It is felt that a discussion of the following questions will help us to better recognize and guard against many of the hazards incident to handling objects:

1. Under what conditions should gloves be worn in handling objects?
2. When is it dangerous to wear gloves?
3. What safeguards can be taken to protect the feet from rolling or falling objects, or objects being dropped?
4. Why is it important to check your footing before taking hold of an object to lift, load or unload?
5. What precautions should be observed when two or more persons are lifting, loading or unloading an object together?
6. Is a chain or a wire line safest for a load sling? Why?
7. What is the safest method for carrying tools, material or equipment to an above ground structure?
8. Under normal conditions, what weight load is considered safe for one man to handle?
9. Is it safe to take hold of pipe with the hands inside?
10. What type of object should never be stored in an upright position? Why?
11. How effective is a hard hat in protecting against falling objects or objects being dropped?
12. What precautions should be taken before lowering a load that is being handled by crane or winch line.
13. What hazards are involved in handling glass bottles, tubes, and jars?
14. What is the danger of trying to force a stopper in a glass container?
15. Can a man lift or carry as much on an incline or on soft ground as he can on a level, firm surface?
16. What is the hazard of handling cutting tools such as machetes, ditch bank blades and axes?

CHECKING FOR PHYSICAL HAZARDS

Accidents resulting from equipment failures and other physical hazards occur less frequently, but are usually more serious than those caused by unsafe work practices.

Because of the potential seriousness of injuries from this source, the detection and correction of these conditions becomes doubly important.

The following questions should bring out the things that we can do to eliminate physical hazards and conserve tools, equipment, and materials on our respective jobs:

1. Name the hazards that should be looked for in inspecting floors.
2. What hazards should be looked for in inspecting portable and stationary ladders?
3. What points should be inspected to detect hazards or defects on a gas engine? A gasoline motor?
4. What practices can cause excessive wear or damage to a gas engine? A gasoline motor?
5. What care should be exercised to avoid damage or unnecessary hazards in operating and maintaining a plug valve?
6. How would you go about inspecting an air compressor and an air storage tank?
7. Should an inspection be made of a pipe line before removing or putting on hand clamps and split sleeves? What items should be checked?
8. What parts of machinery should be guarded?
9. What type of guard should be installed at the following points: (a) Open gears, (b) moving belt, (c) fly wheels, (d) pit and sump openings.
10. What type of portable lamp and cord is considered safe?
11. How would you inspect such equipment?
12. What care is required for the following protective items to insure their safe condition and long life: (a) Goggles, (b) respirators, (c) hose-type gas masks, (d) cannister-type gas masks, (e) derrick and lineman's belts.
13. What items should be checked in inspecting such equipment as separators, stills, refractionating units and drips?
14. What cardinal principle should be followed to insure good housekeeping around any plant or job?

THINGS WE DO WHICH CAUSE ACCIDENTS

Many people are injured because they do the wrong thing at the wrong time. By doing the wrong thing at the wrong time we mean taking unnecesary chances, working with undue haste and following unsafe practices.

Men do not do these things intentionally. Nobody wants to get hurt or to hurt anyone else, but through worry, indifference, or lack of knowledge, we do things that set the stage for an accident.

A discussion of the following questions should help all of us to better understand how these accident situations develop and what to do to guard against them:

1. Why are accidents more likely to occur on rush jobs?
2. Is it possible to work with speed and do the job safely? How?
3. What steps are necessary to insure that members of a crew understand the job that is to be done and that their efforts are coordinated?
4. What is the usual reason for using the wrong tool, such as using a wrench for a hammer?
5. How can this practice be overcome?
6. What is the danger of jumping over ditches, pipe, and other such material?
7. Does the time saved justify taking the chance?
8. If you were breaking in a new man on your job, what safety instructions would you give him?
9. How can one man on the job distract the attention of those he is working with?
10. What causes a man to have a lapse of memory, or let his mind go "wool gathering"?
11. Can anything be done about this?
12. Who loses when you get hurt?

SAFETY TIPS FOR THE HOLIDAYS

For many years the holiday season has brought with it a tragic increase in accidents, especially those in the home and on the highway.

Highway accidents are mounting as a result of increased traffic and the removal of restrictions. Obviously, the best way to avoid highway accidents is to stay off the highways as much as possible, yet we know there will be many extra thousands on the roads, coming and going from holiday gatherings of families and friends.

Though most persons now recognize that even small amounts of alcohol seriously affect our driving judgment, it is at this time of year that this fact is most often forgotten. Let's make it an iron-clad rule that whoever does the driving does no drinking.

Probably the greatest single holiday hazard in the home is that of fire. Wrappings and decorations are highly flammable and these coupled with the general use of decorative candles create a serious hazard.

Perhaps the answers to the following questions will serve to remind us of ways to keep the best days of the year safe:

1. What practices in regard to rubbish should be observed to avoid fires?
2. Are just any kind of electric Christmas tree lights safe?
3. What precautions should be remembered when putting up outdoor decorative lights?
4. If decorative candles are used what precautions should be observed?
5. If you are making an automobile trip, what is the most important thing to do to insure safety?

DEFENSIVE DRIVING

The following analysis gives the unsafe practices committed by drivers in eleven automobile accident cases:

Unsafe Practice	No. Accidents
1. Driving too fast for conditions	1
2. Inattention	3
3. Cutting in or crowding	1
4. Passing standing streets car	1
5. Failing to signal	1
6. Improver turning	2
7. Following other car too closely	2

Defensive driving is a comparatively new term. In effect, it means operating your vehicle in a manner that will enable you to keep out of accidents yourself and at the same time try to safeguard the reckless and indifferent driver. A discussion of the following questions should help all of us to a better understanding of how to drive defensively:

1. What is meant by keeping a vehicle under control at all times?
2. What do we mean by over-driving your lights?
3. What is the proper thing to do when you observe a vehicle approaching on your side of the road?
4. What precautions should be observed in approaching an intersection even though you are traveling on the right-of-way street?
5. The driver of another vehicle persists in following your car too closely and will not pass when you slow down. What would you do under these circumstances?
6. What is the safe thing to do when the driver of the vehicle ahead makes a hand signal?
7. What should you do if a vehicle starts to pass you on a curve?
8. Why is it so essential to keep your eyes on the road and your mind on the job of driving at all times?
9. What precautions can be taken to guard against running down pedestrians at night?
10. What is the safest procedure to follow when meeting a vehicle with blinding lights?
11. What extra driving precautions should be exercised when traveling a strange highway?

HOME ACCIDENTS

1. Are more people killed in home accidents each year than die from industrial injuries?

a. Yes — more than twice as many. Each year the proportions run approximately 30,000 home fatalities to 18,500 killed in industry.

2. What are the leading causes of home accidents?
   a. Falls, burns, poisoning, firearms and asphyxiation.
3. What are some of the more common causes of falls?
   a. Running down stairways.
   b. Stumbling over objects on stairways and floors.
   c. Tripping over rugs.
   d. Use of chairs, tables, etc., to stand on.
   e. Falls on highly polished floors.
4. Where and how do most of the fatal burn accidents occur?
   a. The whole house contributes to this type of accident, but the kitchen holds the largest share of "honors."
   b. Scalds from hot water and hot grease.
   c. Clothing fires catching from bonfires.
   d. Clothing fires catching from open fires.
   e. Smoking in bed.
   f. Misuse and mishandling of gasoline and kerosine.
5. What precautions can be taken to prevent poisonings?
   a. Label all bottles.
   b. Keep all medicine in chest out of children's reach.
6. How can home hazards be discovered?
   a. Make a thorough inspection of the premises from basement to attic.
   b. Observe the members of the household to see that they do not follow unsafe practices.
7. What can be done to stop home accidents?
   a. Correct all physical hazards.
   b. Talk safety and set an example for the children by practicing it.

THE IMPORTANCE OF FIRST AID

1. What type of wounds most often become infected?
   a. Minor wounds, such as scratches, small cuts, bruises, etc.
2. Why is this so?
   a. Because of neglect, failure to get first-aid treatment.
3. What is infection?
   a. Pus formation and slough off of tissues due to activity of a specific germ.
4. What are the results of infection?
   a. Pain, loss of life and limb, permanent disability, disfiguration, loss of time from work, etc.
5. How can we keep germs from getting in wounds?
   a. Use of germ killing antiseptic and use of sterile dressing.
6. What are some of the things we shouldn't do in treating open wounds?
   a. Wash in water, wipe off with handkerchief or anything other than sterile dressing.
7. In what type of injuries should antitetanus be given?
   a. Nail punctures, cuts from tin or any other deep wounds.
8. Tell, if possible, of a minor injury that became a serious condition because of infection.

PREVENTION AND CURE OF COLDS

1. What are the usual causes of colds?
   a. Drafts, overheated air and poor ventilation, getting wet, chilling, insufficient rest, etc.
2. What will result from a neglected cold?
   a. Pneumonia, influenza, mastoid trouble, etc.
3. What are the usual effective cures?
   a. Drink plenty of fluids, bicarbonate of soda, one level teaspoon full every two hours for three doses, laxatives, hot bath and hot drinks before going to bed, rest in bed, etc.
4. What preventives should be used to avoid colds?
   a. Avoid contact with persons already affected. Avoid using towels, utensils, etc., used by persons that have colds. Do not sleep or rest in drafts. Avoid getting wet and chilled and overtired.

SAFE DRIVING IN SCHOOL ZONES

1. What is a school zone?
2. Why do we have danger zones in the vicinity of schools?
3. Does the responsibility for an accident rest upon the driver of the car or the child?
4. Why?
5. What safety precautions should we observe while driving in school zones?
6. How can the drivers of company vehicles set a good example during school season?

CARBON MONOXIDE GAS

1. What is carbon monoxide gas?
   a. A colorless, highly poisonous gas.
   b. Known as (CO).
2. How is it produced?
   a. By the incomplete oxidation of carbon. Or more familiarly, by the incomplete combustion of gas, gasoline, coal or wood.
3. Is carbon monoxide deadly? Why?
   a. Yes, it combines with the hemoglobin of the blood and excludes oxygen.
4. What are the symptoms of carbon monoxide poisoning?
   a. Yawning, dizziness, fluttering heart, etc.
5. What is the first aid treatment for carbon monoxide poisoning?
   a. Remove to fresh air, apply artificial respiration, treat for shock.
6. What must we do to prevent ourselves or others becoming victims of carbon monoxide poisoning?
   a. Provide adequate ventilation in offices, shops, and homes.
   b. Have gas stoves and appliances properly adjusted by responsible service men.
   c. Never run automobile engines in closed buildings.
   d. Have outlets from exhausts of stationary engines lead to outside of buildings.

THINGS THAT GO TO MAKE A SAFE JOB

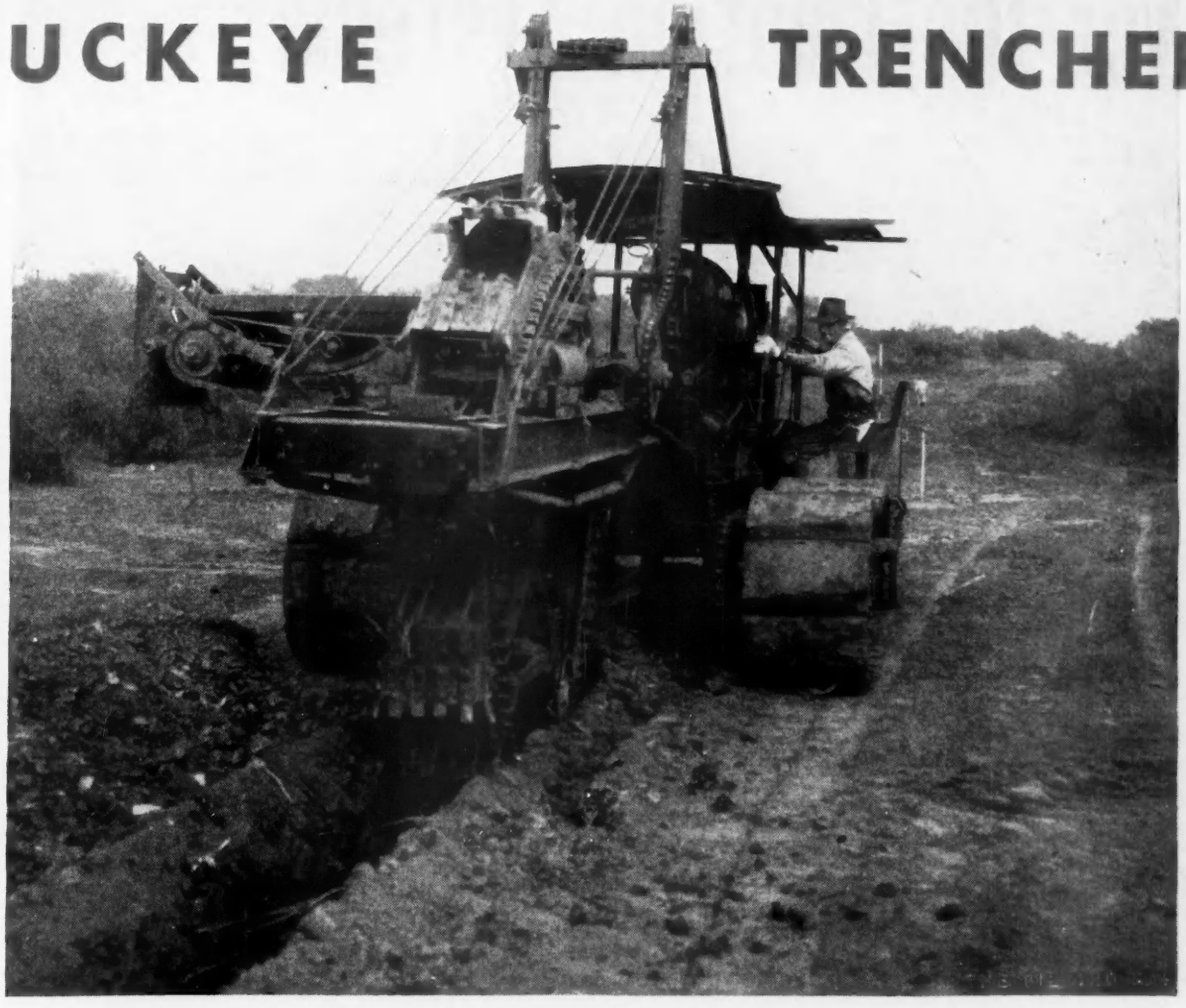
Many things go to make a safe job. A sincere interest in safety on the part of the entire crew is one of the first and most important factors. It is reasonably certain that if nobody concerned themselves with safety or cared whether or not accidents occurred, somebody would get hurt. It is also pretty certain that an accident would occur sooner or later if there was just one man in the crew indifferent to safety. This is so because it takes everybody in the gang to make a good record, but it only takes one man to break it.

Beyond this important question of safety interest, there are other factors such as proper job planning, safe work procedure, teamwork, good tools and equipment, personal protective equipment, safe transportation, knowledge of first aid, and good housekeeping.

A discussion of the following question outlines should develop new ideas on ways and means of putting these fundamentals of safety to work on our everyday jobs:

1. What is meant by safety consciousness.
   a. Does the average individual who has had little contact with safety have any particular interest in the subject?
   b. What would you tell a new employe in order to arouse his interest in safety?
   c. How may we, as individuals, keep our interest in safety alive?
2. What things must be considered in planning for safety on a job?
   a. Is it necessary for the man working by himself to plan his jobs?
   b. Why is job planning more important where two or more men are working together?
3. What do we mean by safe work procedure?
   a. Is a certain way of doing a job correct just because it has always been done that way?
   b. Is the new employe likely to know anything about safe work procedure?
   c. How does attitude enter into the question of safe working methods?
   d. Would you tell the new man anything about the good safety record of his crew, department or district? Why?
   e. Why does a discussion of right and wrong methods help the experienced man?
4. How can a lack of teamwork in a crew cause accidents?
   a. What is the best way to get the new man to feel that he is "one of the gang"?
   b. Upon what factors does teamwork and cooperation depend?
5. Why are accidents resulting from failure of tools and equipment likely to be serious?
   a. How often should chisels, hammers, wrenches, and other such hand tools be checked?
   b. What causes most hand tools accidents?
   c. Why is it important to check frequently on the condition of engines, pumps, and other moving machinery?
6. What new hazards have been introduced by recent changes in methods of transportation?
   a. What primary precautions should be observed in working and around saddle horses and teams?
7. What are the primary purposes of first aid?
   a. Should all injuries, regardless of how minor, be reported? Why?
   b. Assuming that you are working in an isolated place with one other man, what one first aid principle would you want him to know?
8. What is meant by good housekeeping?
   a. How does job pride affect housekeeping?
   b. Is cleaning up a part of job completion?
   c. Does good housekeeping contribute to efficiency of operations? How?

BUCKEYE TRENCHERS



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Wherever trench for petroleum and natural gas pipelines must be dug, a Buckeye Trencher can do the job faster and at lowest cost. This is a fact that's proved daily . . . as it has been throughout the last 53 years. The reason is that Buckeye gives you trenchers designed for digging in every terrain and condition that a job might provide. For example, the Model 48 "Mainliner" shown above is one of three Buckeyes used by the Holland Construction Company of Tulsa, to dig 160 miles of gathering and repressuring gas lines. Every type of soil was met, including gumbo, sand, and rock. But whatever the soil, the Buckeye Trenchers rolled on . . . giving dependable service and speed, at lowest cost. Write for complete information.

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Power Distribution Systems

FOR OIL FIELD PUMPING

By W. C. BLOOMQUIST and J. N. POORE
General Electric Company

Use of Estimating Data

CONSIDERABLE data are included here for handy reference and for quickly estimating the various required voltage drops.

The quick-estimating voltage charts will be especially useful in eliminating a large number of tedious calculations otherwise necessary even for preliminary layouts. The unit-load - unit-length principle of voltage-drop calculations is particularly useful. After the most economical distribution layout is selected, then the more accurate, final, long-hand calculations should be made.

Voltage Line-Drop Charts

Voltage-drop charts are included for the most common voltages encountered in oil field distribution systems. Fixed conductor spacings, which represent the weighted average for this country, have been used for each of the different voltage classes, as indicated on the respective charts. However, there can be a material departure from these conductor spacings without greatly affecting the accuracy of the results obtained.

The percent voltage drop is in terms of the voltage at the load—i.e., the receiver and voltage. For example, if the voltage drop as read from the 440-volt chart is 10 percent, it means that the voltage at the sending end, e.g., transformer bank, must be 440 x 1.10 or 484 volts. If the receiver-end voltage is different from 440 volts then a load multiplier, also given on the chart, must be applied. Since voltage drop or regulation is commonly expressed in terms of the receiver-end voltage, this means some cut - and - try work is necessary. However, for estimating purposes only, the percent regulation on the basis of the known sending end voltage may be used without too great an error. Thus, if the no-load transformer voltage is 480 volts and the regulation is 15 percent, the approximate receiver-end voltage is 480/1.15 or 418.

These charts can be used directly when only a single load is connected to a line; when several loads are tapped along the line cut-and-try checks must be made for each line section, starting from the remote load.

Several calculations of typical oil field layouts having several 440-volt loads tapped off of a 440-volt feeder, such as Figure 12, showed that if the voltage drop as read directly from the 440-volt chart did not exceed 10 percent, the actual minimum voltage at the farthest well location would not be less than 415 volts, which is the minimum operating voltage recommended. If, however, advantage is taken in setting transformer taps to compensate for line and transformer regulation, the maximum voltage drop as read directly from the 440-volt chart should not exceed 12.5 percent.

Voltage Drop Due to Motor Starting

The voltage drop due to motor starting should be checked for the final distribution layout to make sure that sufficient voltage is available at remote well locations to start the motor.

The voltage drop in the transformer bank and secondary lines may be read directly from the table and voltage-drop chart. The voltage drop in the primary line usually can be neglected. The following data are representative for motor-starting conditions:

900 to 1200 Revolutions Per Minute Motors

Type of Motor	Starting Power Factor
Normal starting torque	30 to 50 percent
High starting torque	35 to 60 percent
	Motor Inrush (Times full-load current)
Normal starting torque	5.0 to 6.5 (5.5)
High starting torque	4.5 to 6 (5.5)

The full-load motor kva will range from 0.95 to 1.05 of the motor horsepower rating, but for estimating purposes it is usually taken as 1 kva per horsepower.

Example—What kilowatt load value should be used in calculating the voltage drop in the 440-volt line due to starting a 15-hp high-starting-torque motor?

Kva = 15 (hp) × 5.5 (inrush) × 1.0 (kva/hp) = 82.5.

For a starting power factor of 40 percent

$$\text{Kw} = \frac{40}{100} \times 82.5 = 33$$

The voltage drop in the line is read directly from the 440-volt chart in the regular manner for a load of 33 kw at a power factor of 40 percent.

When capacitors are used with the motor for power-factor improvement, the voltage drop will be less and will be 90 to 95 percent of the voltage drop without capacitors. While the improvement of voltage drop due to capacitors for motor starting is not nearly as large as the improvement for normal load operation, it is helpful and especially so when starting is difficult because the starting torque varies as the voltage squared (V^2).

TABLE 4

Approximate Line Resistance and Reactance Data for Aluminum Conductors
Single Conductor in Ohms per 1000 Feet at 60 Cycles

Gage AWG or MCM	Copper Equiv.	Res. at 25 C ACSR Ohms	Approx.[1] Current Capacity Amps.	Reactance Ohms Equivalent Distance (inches) Between Conductors[2] 12″	18″	30″	36″	42″
4	6	0.425	103	0.117	0.126	0.138	0.142	0.146
3	5	0.337	120	0.115	0.124	0.136	0.140	0.144
2	4	0.268	140	0.113	0.122	0.134	0.138	0.142
1	3	0.212	160	0.111	0.121	0.132	0.136	0.140
1/0	2	0.169	186	0.109	0.118	0.130	0.134	0.138
2/0	1	0.136	215	0.107	0.116	0.128	0.132	0.136
3/0	1/0	0.110	250	0.105	0.114	0.126	0.130	0.134
4/0	2/0	0.088	290	0.103	0.112	0.124	0.128	0.132

[1] 40 C rise for bare overhead conductor. Current-carrying capacity not an important factor in selecting conductor size for oil-field systems.
[2] For equally spaced conductors mounted horizontally or vertically, the equivalent distance between conductor = actual spacing x 1.26.

TABLE 5

Approximate Line Resistance and Reactance Data for Copper Conductors
Single Conductor in Ohms per 1000 Feet at 60 Cycles

Gage AWG or MCM	Res. at 25 C ACSR Ohms	Approx.[1] Current Capacity Amps.	Reactance Ohms Equivalent Distance (inches) Between Conductors[2] 12″	18″	30″	36″	42″
4	0.266	103	0.114	0.124	0.136	0.140	0.144
3	0.211	120	0.111	0.121	0.133	0.138	0.141
2	0.169	140	0.109	0.118	0.129	0.134	0.137
1	0.132	160	0.106	0.115	0.127	0.131	0.135
1/0	0.105	186	0.103	0.113	0.124	0.129	0.132
2/0	0.0835	215	0.101	0.110	0.122	0.126	0.129
3/0	0.0662	250	0.098	0.108	0.119	0.123	0.127
4/0	0.0525	290	0.0953	0.105	0.116	0.121	0.124

[1] 40 C rise for bare overhead conductor. Current-carrying capacity not an important factor in selecting conductor size for oil-field systems.
[2] For equally spaced conductors mounted horizontally or vertically, the equivalent distance between conductor = actual spacing x 1.26.

SERVICE

Part 3
(Conclusion)

Unit-load - Unit-length Principle

In the unit-load-unit-length (UL-UL) principle, the voltage drop is calculated for a selected load and conductor length and this value used as a base for other combinations of loads and lengths.

The following example will serve to illustrate the use of the unit-load-unit-length principle:

Well layout, according to Figure 12.

Well motors, 15-hp 440-volt 1200-rpm high-starting-torque type.

All wells pumped simultaneously.

All motors fully loaded.

Well spacing, 1320 feet (40 acres) per well.

Line conductor, No. 2 ACSR.

Substation under consideration, T6, Figure 12.

The unit length is that corresponding to the well spacing, or 1320 feet.

The unit load is that corresponding to the motor load.

The kw input of a motor, or the unit load, is that corresponding to the average load on the motor, and for a fully loaded motor for pumping-jack service this average load is 60 to 70 percent of the motor horsepower rating. Therefore, if the motor has been selected correctly, the kw input may be expressed in terms of the motor rating as follows:

$$\text{Kw input} = \frac{\text{Motor hp rating} \times 0.746 \times \text{A Loading Factor}}{\text{Efficiency}}$$

Assuming a loading factor of 65 percent and an efficiency of 82 percent, then:

$$\text{Kw input} = \frac{15 \times 0.746 \times 0.65}{0.82} = 8.9 \text{ kw}$$

The load power factor may be read from Figures 13 or 14. For a loading factor of 65 percent and a 1200-rpm motor, the power factor as read from Figure 13 is 70 percent, which, when expressed in terms of a decimal, is 0.7. (Figures 13 and 14 also show the resulting power factor when capacitors are used to improve the motor power factor; it should be noted that the resulting power factor is excellent and is practically independent of motor loading, an especially desirable advantage in oil-pumping service.)

The voltage drop for a unit load of 8.9 kw at 0.7 power factor and a unit length of 1320 feet, may be read directly from the 440-volt chart, but not with any degree of accuracy for such a small load. A higher load, 40 kw, was selected. The voltage drop (see chart for construction lines) for 40 kw is 10.65 percent. The voltage drop for one unit load of 8.9 kw is:

$$\frac{8.9}{40} \times 10.65 \text{ percent} = 2.37, \text{ or say } 2.4 \text{ percent}$$

The voltage drop for 1 UL-UL is 2.4 percent. The voltage drop for 2 UL-UL is 4.8 percent and may be for 1 unit load and 2 unit lengths or 2 unit loads and 1 unit length. The advantage of this UL-UL principle becomes apparent when many voltage drop calculations are involved.

To obtain the voltage drop of well W1 of substation T6, it is necessary to start from the substation towards the wells. The following tabulation illustrates this procedure:

Well Location	Unit Load	Unit Length	No. of UL-UL	Percent Voltage Drop
W2	W1+W2+W3=3	1	3	3x2.4=7.2
W1	1	1	1	W2+2.4=9.6
W3	1	1	1	W2+2.4=9.6
W4	1	1	1	2.4
W5	1	0	0	0
W6	1	1	1	2.4
W8	W7+W8+W9=3	1	3	7.2
W7	1	1	1	W8+2.4=9.6
W9	1	1	1	W8+2.4=9.6

TABLE 6

Approximate Required Transformer-Bank KVA Rating[1]

(Without Capacitors)

Motor hp. [2]	NUMBER OF MOTORS PER TRANSFORMER															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
3	4.5	9	9	15	15	22.5	22.5	30*	30	30	30*	45*	45	45	45	45
5	9	15*	15	22.5	30*	30	45*	45	45	45	75	75	75	75	75	75
7.5	9	15	22.5	30	45*	45	75*	75	75	75	75	112.5	112.5	112.5	112.5	112.5
10	15*	22.5	30	45	45	75	75	75	112.5*	112.5	112.5	112.5	150	150	150	150
15	15	30	45	75	75	112.5*	112.5	112.5	150	150	150	225*	225*	225	225	225
20	22.5	45	75	75	112.5	112.5	150	150	225*	225	225	225	225	300	300	300
25	22.5	45	75	112.5	112.5	150	150	225*	225	225	300	300	300	300	300	450
30	30	75*	75	112.5	150	150	225*	225	225	300	300	300	450	450	450	450
40	45*	75	112.5	150	225*	225	300	300	300	450	450	450	450	600*	600	600
50	45	112.5*	150	225*	225	300	300	450	450	450	450	600	600	600	...	...
60	75*	112.5	150	225	300	300	450	450	450	600	600	...	...	...	...	...

[1] Transformer kva on basis of 3 single-phase transformers. Those marked with (*) could use next smaller standard-size three-phase bank. For estimating purposes, transformer kva = motor horsepower rating.

[2] Motors up to 20 hp—high-starting-torque type. Motors above 20 hp—normal-starting-torque type.

TABLE 7

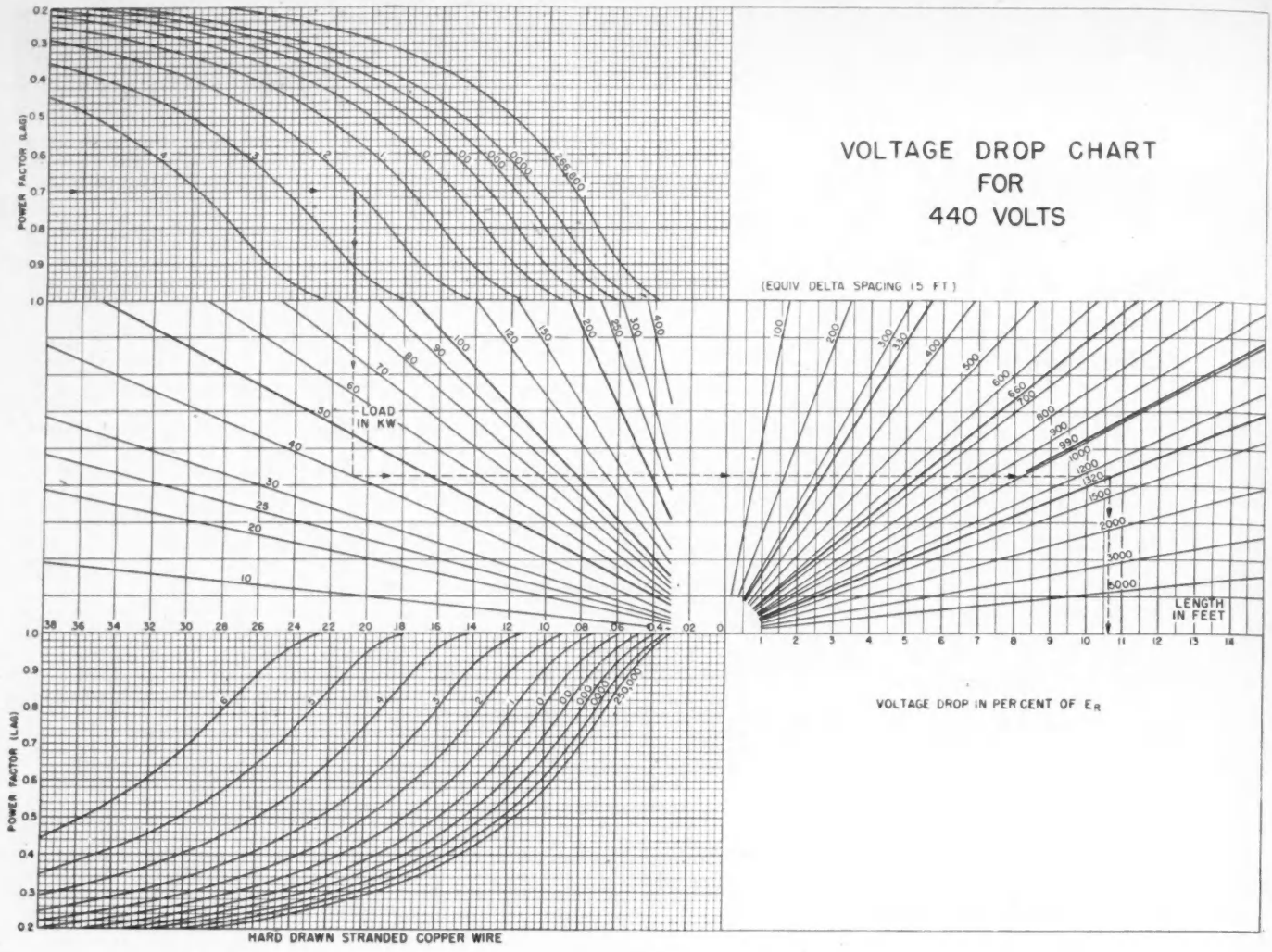
Approximate Required Transformers Bank KVA Rating[1]

(With Capacitors)

Motor hp. [2]	NUMBER OF MOTORS PER TRANSFORMER															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
3	4.5	4.5	9	9	15*	15	15	22.5	22.5	22.5	22.5	30	30	30	30	45*
5	4.5	9	15*	15	22.5	22.5	30	30	30	45*	45	45	45	45	75	75
7.5	9	15*	15	22.5	30	30	45	45	45	75*	75	75	75	75	75	112.5
10	9	15	22.5	30	45*	45	75	75	75	75	75	112.5*	112.5*	112.5	112.5	112.5
15	15*	22.5	30	45	75*	75	75	112.5*	112.5*	112.5	112.5	150	150	150	150	225*
20	15	30	45	75	75	112.5*	112.5	112.5	150	150	150	225*	225*	225	225	225
25	22.5	45*	75	75	112.5*	112.5	150	150	150	225*	225	225	225	300	300	300
30	22.5	45	75	112.5*	112.5	150	150	225*	225	225	300	300	300	300	300	450
40	30	75	112.5*	112.5	150	225*	225	225	300	300	300	450	450	450	450	450
50	45*	75	112.5	150	225*	225	300	300	300	450	450	450	450	450	600	600
60	45	112.5*	150	225*	225	300	300	450	450	450	450	600	600	600	...	...

[1] Transformer kva on basis of 3 single-phase transformers. Those marked with (*) could use next smaller standard-size three-phase bank. For estimating purposes, transformer kva = 0.75 motor horsepower rating, based on power factor of 97.5 percent, or with motors with capacitors listed in Table 1.

[2] Motors up to 20 hp—high-starting-torque type. Motors above 20 hp—normal-starting-torque type.



LOAD MULTIPLIERS FOR DIFFERENT RECEIVER VOLTAGES

Receiver voltage	404	408	412	416	420	424	428	432	436	440	444	448	452	456	460	464	468	472	476	480
Kw. multiplier..	1.186	1.163	1.141	1.119	1.097	1.077	1.057	1.037	1.018	1.000	0.982	0.965	0.948	0.931	0.915	0.899	0.884	0.869	0.855	0.840

TABLE 8

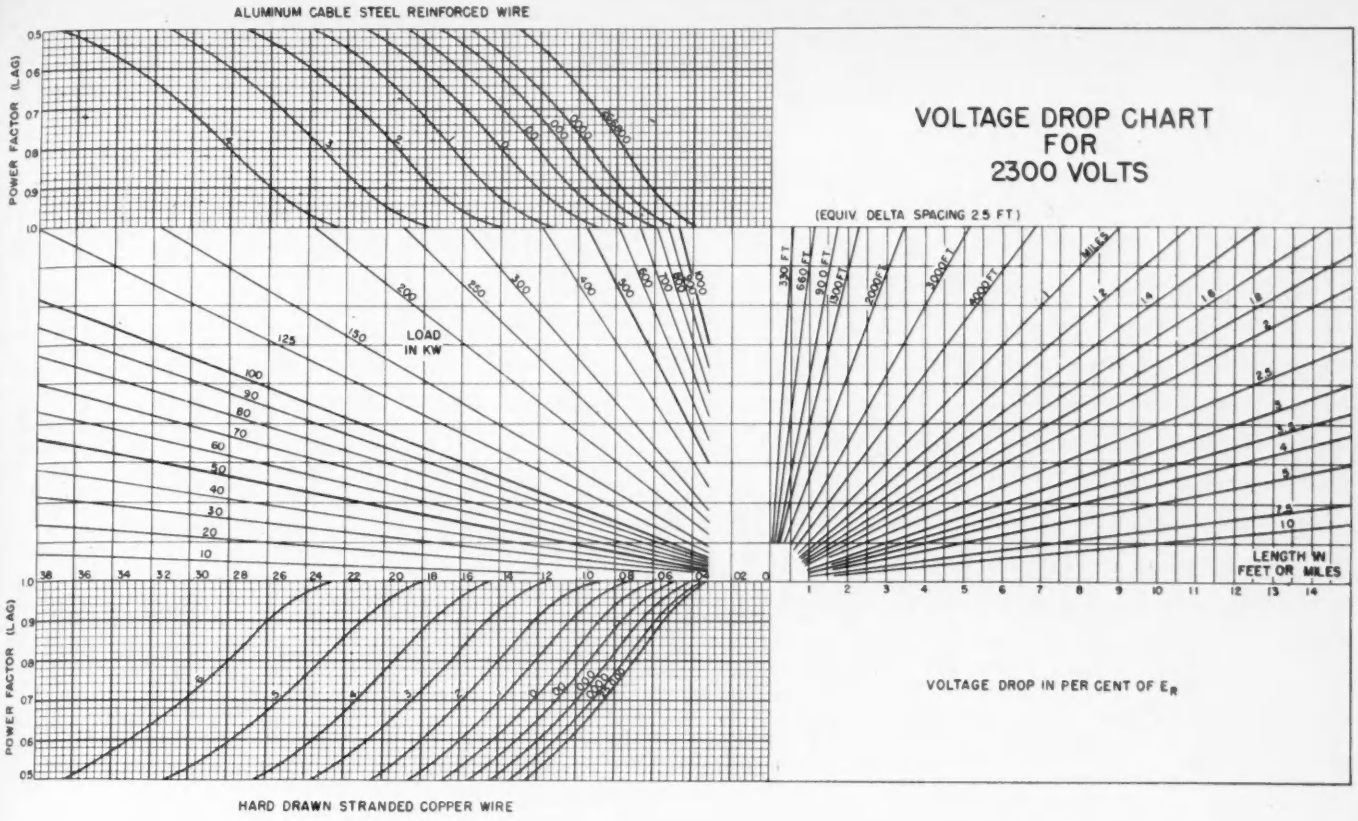
Approximate Per Cent Voltage Drop Through a Transformer Bank for One Motor Running
(Without Capacitors)

	3-PHASE TRANSFORMER BANK KVA																			
Motor hp.	4.5	9	10	15	22.5	25	30	37.5	45	50	75	100	112.5	150	200	225	300	450	500	600
	SECTION I										SECTION III				SECTION V					
3	2.0	1.0	0.9	0.6	0.4	0.35	0.3	0.25	0.2	0.2										
5		1.5	1.4	0.9	0.6	0.55	0.45	0.35	0.3	0.28	0.18									
7.5		2.3	2.0	1.4	0.9	0.8	0.7	0.55	0.45	0.4	0.25	0.2	0.18							
10			2.7	1.8	1.2	1.1	0.9	0.7	0.6	0.55	0.35	0.25	0.23	0.18						
15					1.8	1.6	1.4	1.1	0.9	0.8	0.5	0.4	0.35	0.25	0.23	0.2				
20					2.4	2.2	1.8	1.4	1.2	1.1	0.7	0.5	0.5	0.35	0.3	0.25	0.2	0.13		
	SECTION II										SECTION IV				SECTION VI					
25						2.3	1.9	1.5	1.3	1.1	0.7	0.5	0.45	0.35	0.28	0.25	0.18	0.13		
30							2.3	1.6	1.5	1.4	0.8	0.6	0.55	0.4	0.35	0.3	0.23	0.15		
40									2.0	1.8	1.1	0.8	0.7	0.55	0.45	0.4	0.3	0.2		
50										2.3	1.4	1.0	0.9	0.7	0.55	0.5	0.35	0.25	0.23	0.18
60											1.6	1.2	1.1	0.8	0.7	0.6	0.45	0.3	0.28	0.23
75											2.0	1.5	1.4	1.0	0.8	0.8	0.55	0.35	0.35	0.28

NOTE—Table based on 1200 rpm motors. Following multipliers for other motor speeds:

Motor rpm	Sections, I, III, & V	Sections, II, IV, & VI
900	1.2	1.1
1800	0.9	1.0

Motors up to 20 hp—high-starting-torque type.
Motors above 20 hp—normal-starting-torque type.



LOAD MULTIPLIERS FOR DIFFERENT RECEIVER VOLTAGES

Receiver voltage	2020	2040	2060	2080	2100	2120	2140	2160	2180	2200	2220	2240	2260	2280	**2300**	2320	2340	2360	2380	2400
Kw. multiplier	1.297	1.271	1.247	1.223	1.200	1.177	1.155	1.134	1.113	1.093	1.073	1.054	1.035	1.017	**1.000**	0.983	0.966	0.950	0.934	0.918

TABLE 9

Approximate Per Cent Voltage Drop Through a Transformer Bank for One Motor Running
(With Capacitors)

	3-PHASE TRANSFORMER BANK KVA																			
Motor hp.	**4.5**	**9**	**10**	**15**	**22.5**	**25**	**30**	**37.5**	**45**	**50**	**75**	**100**	**112.5**	**150**	**200**	**225**	**300**	**450**	**500**	**600**
3	1.3	0.7	0.6	0.4	0.45	0.25	0.2	0.15	0.13	0.13										
5		1.0	0.9	0.6	0.4	0.35	0.3	0.25	0.2	0.18	0.1									
7.5		1.5	1.3	0.9	0.6	0.55	0.45	0.35	0.3	0.25	0.15	0.1								
10			1.8	1.2	0.8	0.7	0.6	0.45	0.4	0.35	0.18	0.15	0.13	0.1						
15					1.2	1.0	0.9	0.7	0.6	0.55	0.3	0.2	0.2	0.15	0.13	0.1				
20					2.6	1.4	1.2	0.9	0.8	0.7	0.4	0.3	0.25	0.2	0.15	0.15	0.1	0.07		
25						1.7	1.5	1.2	1.0	0.9	0.45	0.35	0.3	0.23	0.2	0.15	0.13	0.08		
30							1.7	1.2	1.2	1.0	0.55	0.4	0.35	0.28	0.2	0.2	0.15	0.1		
40									1.5	1.4	0.7	0.55	0.5	0.35	0.3	0.25	0.2	0.13		
50										1.7	0.9	0.7	0.6	0.45	0.35	0.3	0.25	0.15	0.15	0.13
60											1.1	0.8	0.7	0.55	0.45	0.4	0.3	0.2	0.18	0.15
75											1.4	1.0	0.9	0.7	0.55	0.5	0.35	0.25	0.23	0.18

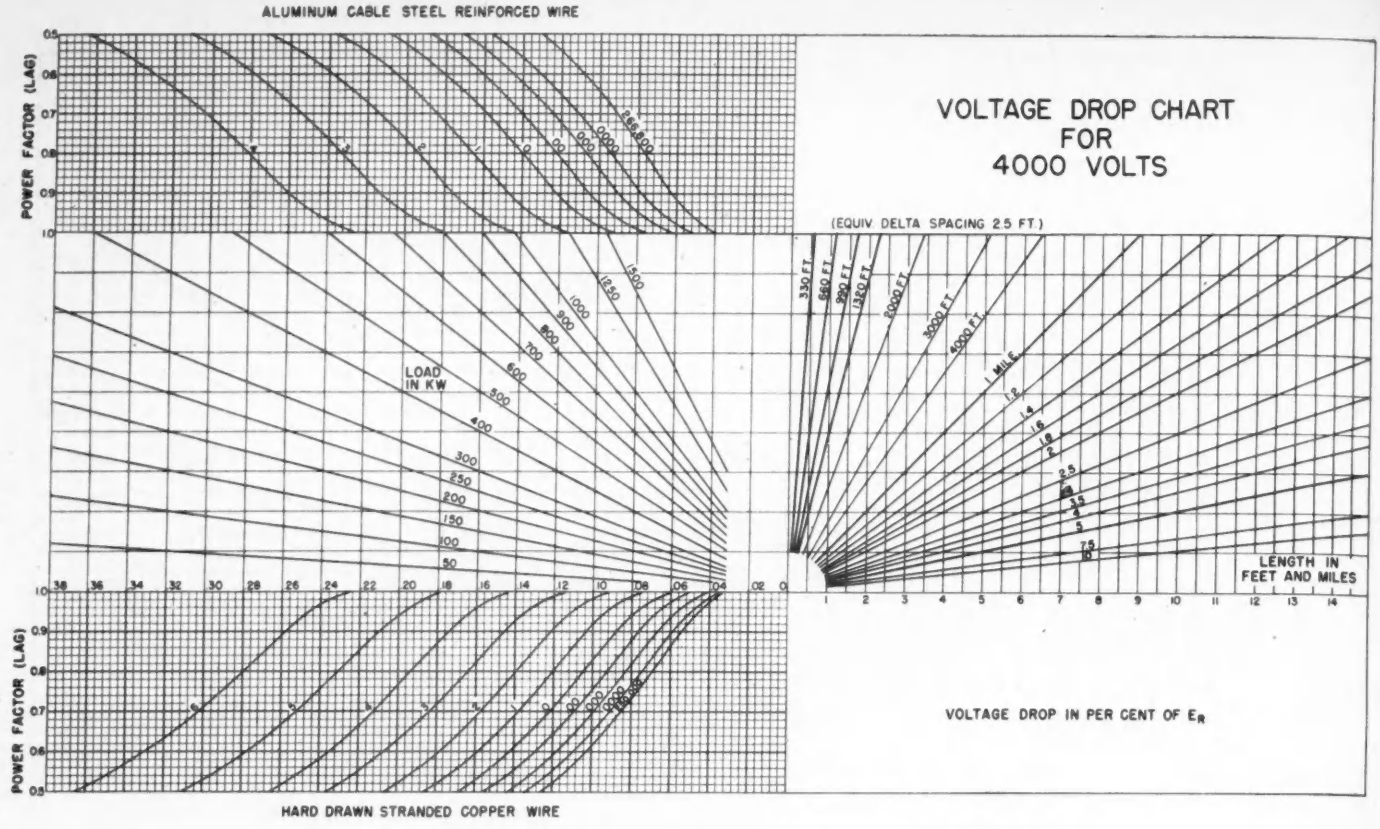
NOTE—Table based on approximately 97.5 percent power factor or with motors having capacitors as listed in Table 1. Data applies to 900, 1200, and 1800-rpm motors. Motors up to 20 hp—high-starting-torque type. Motors above 20 hp—normal-starting-torque type.

TABLE 10

Approximate Per Cent Voltage Drop Through a Transformer Bank Due to Starting One Motor at Full Voltage[1]

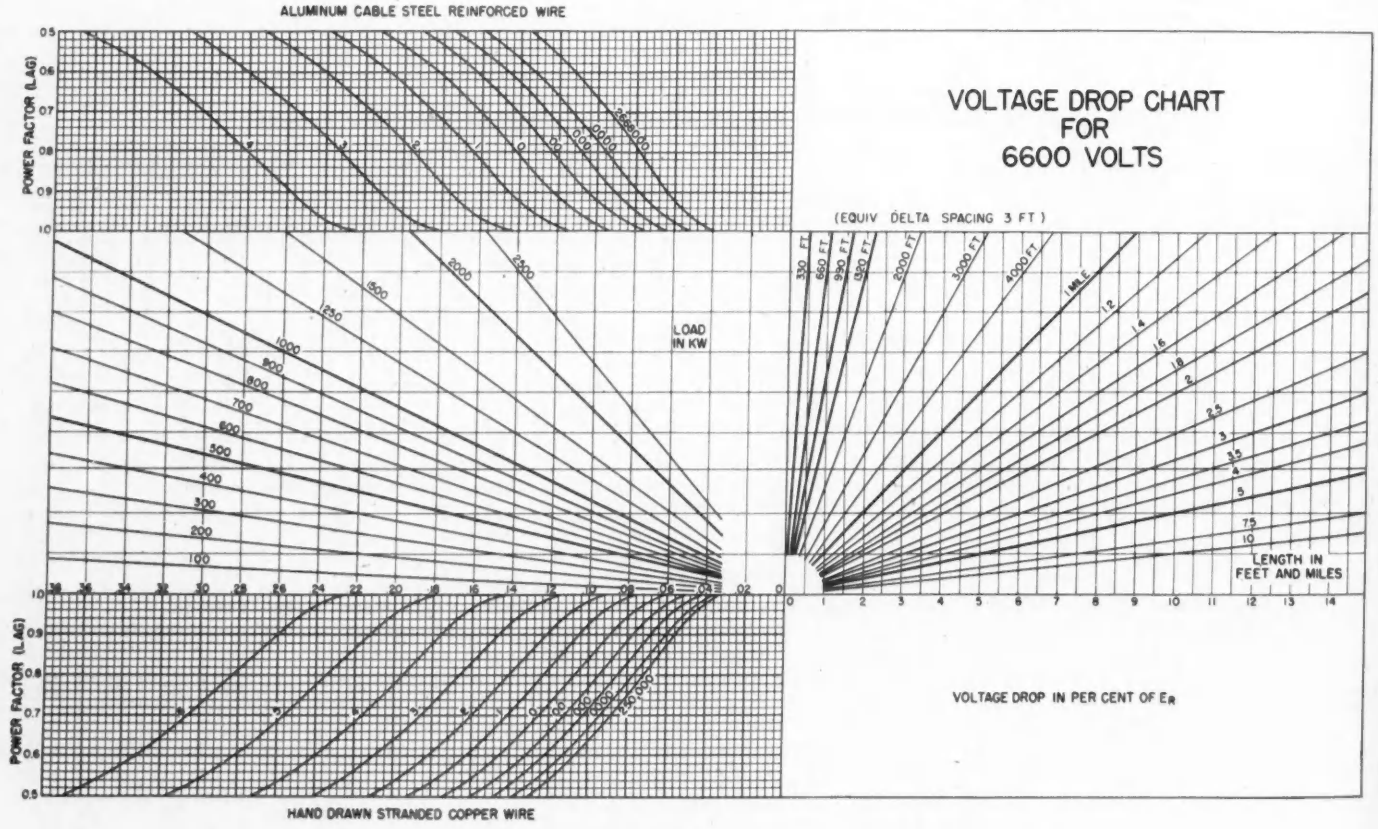
	3-PHASE TRANSFORMER BANK KVA																			
Motor hp.[2]	**4.5**	**9**	**10**	**15**	**22.5**	**25**	**30**	**37.5**	**45**	**50**	**75**	**100**	**112.5**	**150**	**200**	**225**	**300**	**450**	**500**	**600**
3	12.7	6.4	5.7	3.8	2.5	2.3	1.9	1.5	1.3	1.1	0.8									
5		9.7	8.8	5.9	3.9	3.5	2.9	2.3	2.0	1.8	1.3	1.0	0.8							
7.5		13.9	12.5	8.4	5.6	5.0	4.2	3.3	2.8	2.5	1.8	1.3	1.2	0.9						
10			16	10.7	7.5	6.4	5.4	4.3	3.6	3.2	2.3	1.7	1.5	1.1	1.0	0.9				
15				15.8	10.5	9.4	7.9	6.3	5.3	4.7	3.4	2.5	2.2	1.7	1.5	1.3	1.0			
20					13.7	12.3	10.3	8.2	6.9	6.2	4.4	3.3	2.9	2.2	1.9	1.7	1.3	0.9		
25						16.2	13.6	10.8	9.0	8.1	5.9	4.5	4.0	3.0	2.6	2.3	1.7	1.6	1.0	0.9
30							16	12.8	10.7	9.6	7.0	5.3	4.7	3.5	3.1	2.7	2.1	1.4	1.2	1.0
40									14.2	12.8	9.5	7.1	6.3	4.8	4.1	3.7	2.8	1.8	1.7	1.4
50										15.6	11.7	8.8	7.8	5.8	5.1	4.5	3.4	2.3	2.0	1.7
60											13.9	10.4	9.3	7.0	6.0	5.4	4.1	2.7	2.4	2.0
75											17.5	12.9	11.5	8.6	7.5	6.7	5.0	3.3	3.0	2.5

NOTE— [1] Voltage drop with capacitors connected to motor, approximately 5 percent less than values in Table.
[2] Motors up to 20 hp—high-starting-torque type. Motors above 20 hp—normal-starting-torque type.



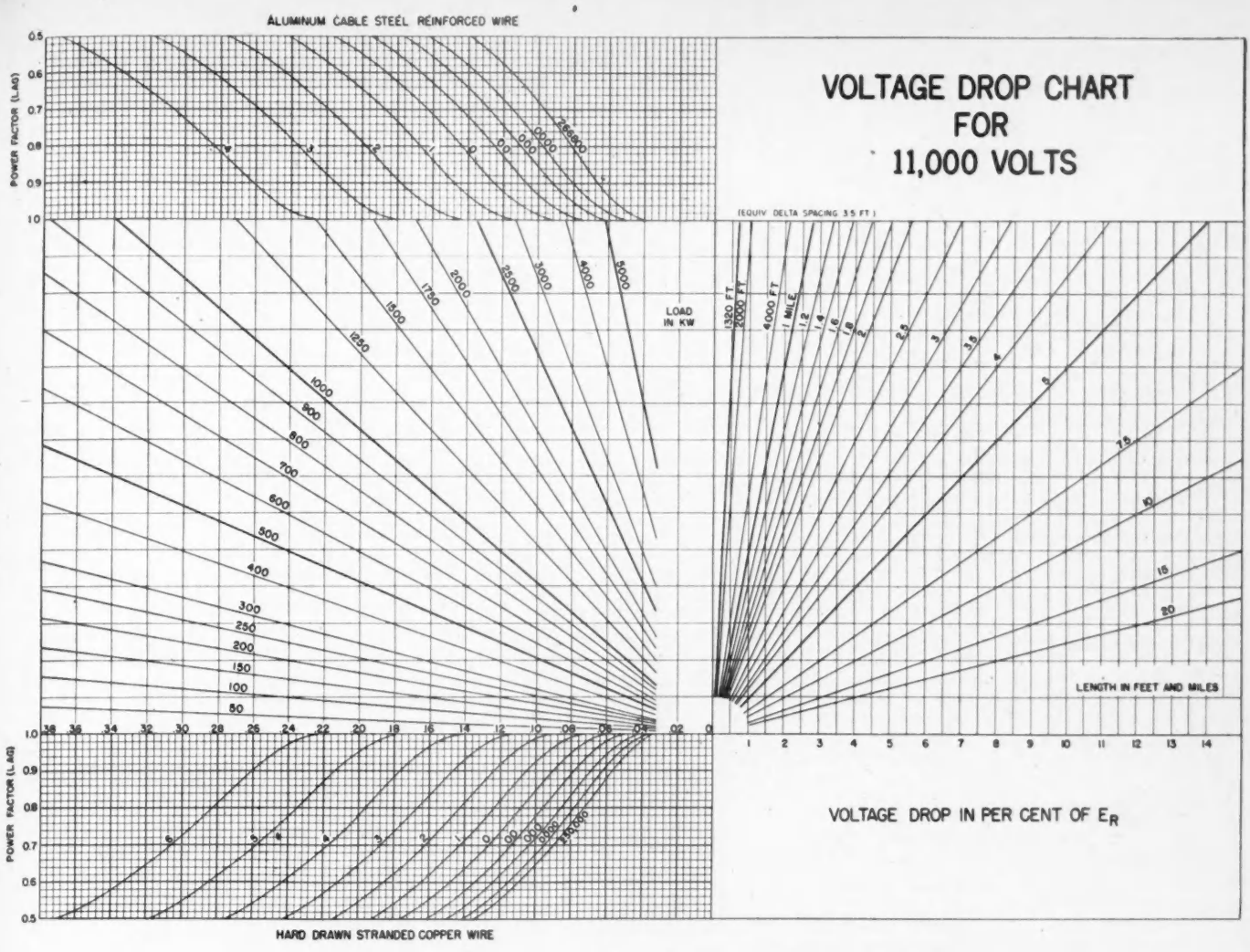
LOAL MULTIPLIERS FOR DIFFERENT RECEIVER VOLTAGES

Receiver voltage	3850	3900	3950	**4000**	4050	4100	4150	4200	4250	4300	4350	4400	4450	4500	4550	4600	4650	4700	4750	4800
Kw. multiplier..	1.079	1.052	1.026	**1.000**	0.975	0.952	0.929	0.907	0.886	0.865	0.846	0.827	0.808	0.790	0.773	0.756	0.740	0.724	0.709	0.694



LOAD MULTIPLIERS FOR DIFFERENT RECEIVER VOLTAGES

Receiver voltage	5950	6000	6050	6100	6150	6200	6250	6300	6350	6400	6450	6500	6550	**6600**	6650	6700	6750	6800	6850	6900
Kw. multiplier..	1.230	1.210	1.190	1.171	1.152	1.133	1.115	1.097	1.080	1.063	1.047	1.031	1.015	**1.000**	0.985	0.970	0.956	0.942	0.928	0.915



LOAD MULTIPLIERS FOR DIFFERENT RECEIVER VOLTAGES

Receiver kv....	9.9	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	**11.0**	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8
Kw. multiplier..	1.234	1.210	1.186	1.163	1.141	1.119	1.097	1.077	1.057	1.037	1.018	**1.000**	0.982	0.965	0.948	0.931	0.915	0.899	0.884	0.869

This same method can be applied for other sub-stations and also for primary-line-drop calculations. However, because the primary-line-drop is so small for a motor unit load, a larger unit load should be used, that of either the smallest or largest transformer bank is convenient.

When motors are not all of the same size and well spacings are not equal, it is best to prepare a master UL-UL voltage-drop table for the various combinations involved; then the drop for a particular UL-UL combination is read directly from the chart.

The UL-UL principle can also be applied to simplify system line-loss calculations. The unit load selected is generally the full-load current of a motor. Allowance must be made for the fact that losses are proportional to the square of the current (I^2). For example, if there are 2 unit loads and 1 unit length, the loss is $(2)^2 \times 1$ or 4 units. The resistance of various conductors sizes are given in Tables 4 and 5.

Selection of Transformer-bank Rating

Table 6 and 7 are handy references for directly selecting the transformer-bank capacity.

The transformer and also the motor rating must be greater than that corresponding to the average pumping load to allow for the extra losses and heating due to the cyclic variation of a pumping-jack load.

Allowance was made in these tables for differences in power factor and efficiency for various types of motors and for the extra losses and heating for this type of service.

For estimating purposes, the transformer rating in kva may be taken as equal to the motor horsepower rating. This is on the basis that the motor is correctly selected and fully loaded on a pumping cycle. If capacitors have values as recommended in Table 1, (THE OIL WEEKLY, December 23, 1946, page 50), then the transformer rating in kva may be taken as equal to 75 percent of the motor horsepower rating.

TABLE 11
Installed Cost of Poles

Pole Type [1]	Nominal System—Volatge Class		
	2400 to 4160	6900	11,000 to 13.200
P Primary	$70	$75	$85
P & S, Primary and Secondary Rack	80	85	95
S Secondary Rack	60	..	..
M[2] Motor Well Connection	80	..	..

[1] See Figs. 6 to 9 for various types of poles.
[2] Include an M pole for each motor.

Transformer-Voltage Regulation

Tables 8 and 9 show the percent voltage drop or regulation through a transformer bank. These data are based on representative transformer - impedance values and for load and power factor corresponding to a fully loaded motor for pumping service. At reduced motor load, the voltage regulation will be less than shown, even though the power factor is poorer.

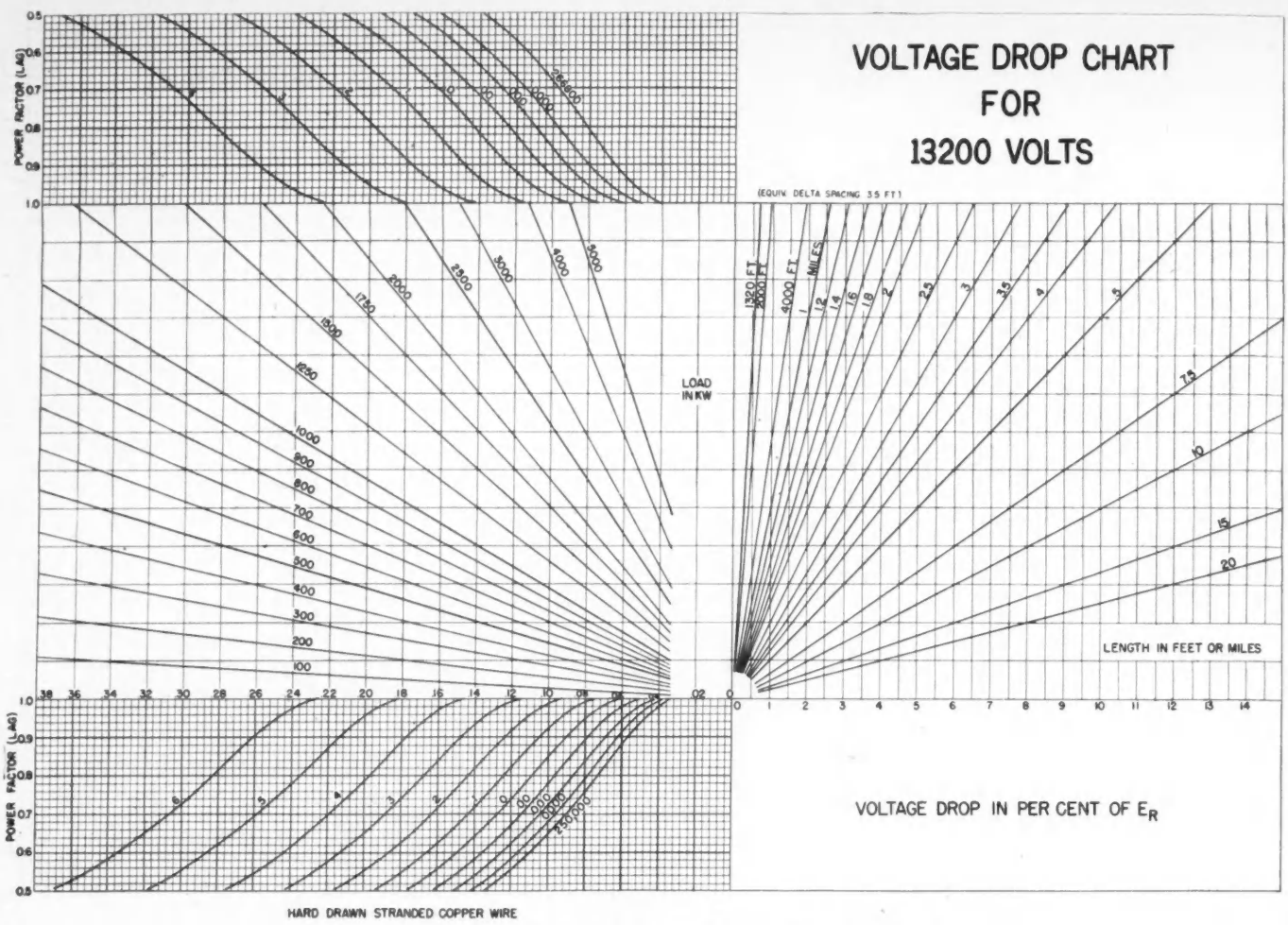
These data are for one motor. The total voltage drop with more than one motor is directly proportional to the number of motors.

Table 10 shows the percent voltage drop or regulation through a transformer bank due to starting a motor.

Example of An Oilfield Layout

Since the distribution-system layout is influenced by the voltage drop at the remote well locations, the first step is to check the voltage drop.

The voltage drop in the primary line and the transformer, at the remote substation, usually ranges from 3 to 5 percent. As a starting point, assume this to be 4 percent and then determine the required conductor size to limit the voltage drop in the secondary lines to 10 to 12.5 percent. The voltage drop through the transformer bank can be quickly selected



LOAD MULTIPLIERS FOR DIFFERENT RECEIVER VOLTAGES

Receiver kv.	11.9	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8
Kw. multiplier	1.230	1.210	1.190	1.171	1.152	1.133	1.115	1.097	1.080	1.063	1.047	1.031	1.015	1.000	0.985	0.970	0.956	0.942	0.928	0.915

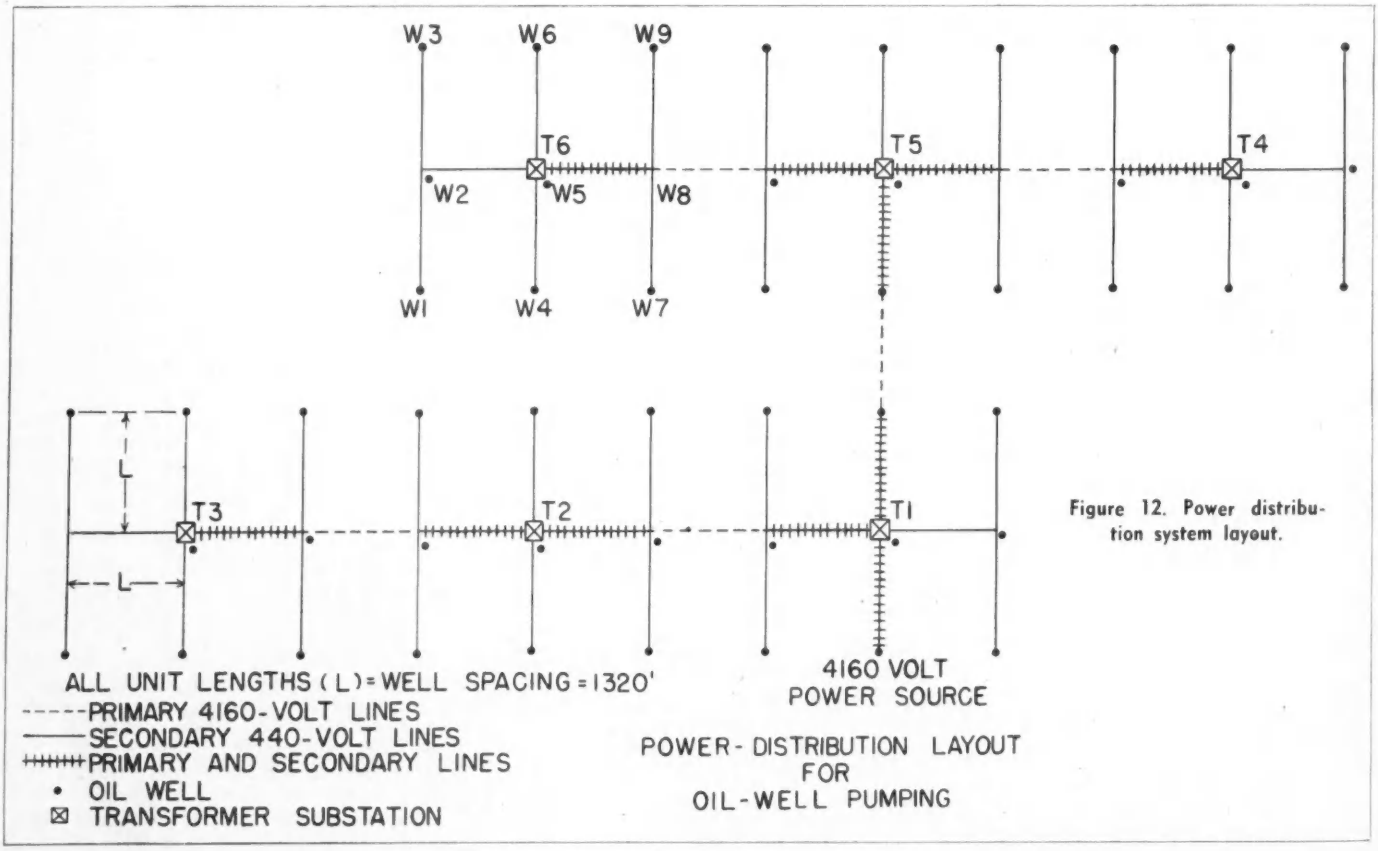


Figure 12. Power distribution system layout.

TABLE 12

Installed Cost of Conductors

Wire Size	Copper Equivalent	Approx. Current Capacity, Amps.	Conductor Weight per Wire Per 1000 Ft., Pounds	Total Cost of Conductors and Stringing and Sagging per 1000 Ft. per 3-Phase Circuit, Dollars	Total Cost of Conductors and Stringing and Sagging per 3-Phase Circuit				
					165 Ft. Dollars	330 Ft. Dollars	660 Ft. Dollars	990 Ft. Dollars	1,320 Ft. Dollars
COPPER CONDUCTORS									
2	.....	209	203	220	36	72	144	218	288
1	.....	244	259	262	43	86	172	258	344
1/0	.....	283	326	314	52	104	208	311	416
2/0	.....	335	411	381	63	126	252	378	504
3/0	.....	389	518	465	77	154	308	462	616
4/0	.....	446	653	600	99	198	396	594	692
250,000 CM	.....	502	772	694	115	230	460	693	920
ALUMINUM CONDUCTORS (ACSR)									
2	4	140	93	138	23	46	92	136	184
1	3	160	117	158	26	52	104	156	208
1/0	2	186	147	184	30	60	120	182	240
2/0	1	215	185	215	36	72	144	213	288
3/0	1/0	250	233	256	42	84	168	253	336
4/0	2/0	290	295	368	61	122	244	364	488
266,800 CM	3/0	389	358	420	69	138	276	414	552

NOTE— Cost of copper taken as 26 cents per pound and aluminum at 28 cents per pound, includes overhead, etc. The Cost of stringing and sagging taken as 2 cents per wire for sizes up to 3/0 and at 3 cents above 3/0. Cost basis, 1944-1945, Southwestern area.

from the tables. Voltage-drop checks will have to be made for a few conductor sizes for the primary line. The total voltage drop at the remote well should not exceed 15 percent as discussed previously. Usually, some trial calculations for various conductor sizes are required, but with a little experience the proper conductor size can be determined quickly.

In order to illustrate the use of the various data, an example will be used. The following are the conditions:

1. Wells to be electrified; 54.
2. Motors, 15 hp, 440 v, 1200 rpm, high-starting-torque type.
3. All motors fully loaded and operated at 70 percent power factor.
4. Well spacing, 1320 feet.
5. Transformer rating to be selected on basis that all wells are pumped simultaneously.
6. Well locations as shown in Figure 12.
7. Primary-power source, 4160 volts.

Two cases are studied, one without use of capacitors and the other with capacitors for power-factor improvement. In each case conductor sizes were selected so the total voltage drop at remote well locations, W_1 and W_3, would not exceed 15 percent.

Case 1. Distribution system without capacitors.

No. 1/0 ACSR for 4160-volt line.

No. 1 ACSR for 440-volt line.

Total voltage drop, including that in the primary and secondary lines and transformer bank, is 14 percent.

Case 2. Distribution system with capacitors for power-factor improvement.

No. 2 ACSR for 4160-volt line.

No. 2 ACSR for 440-volt line.

Total voltage drop, including that in the primary and secondary lines and the transformer bank, is 12.3 percent. A smaller conductor could be used as far as voltage drop is concerned, but No. 2 ACSR is the minimum size for mechanical reasons.

Pole spacing for aluminum may range from 300 to 500 feet. Assume a spacing of 440 feet. The number of poles required can be determined as follows: (See Sub-station T6, Figure 12.) Starting from the sub-station towards well W2, three poles spaced 440 feet apart are necessary in the 1320 foot run. This includes a pole at well location W2. Three poles are required from W2 to W1. A similar procedure is followed for the remainder of the S poles. Do not include a pole at sub-station locations.

From T6 to W8, the poles carry both primary and secondary conductors. Three P & S poles are required from T6 to and including W8. From W8 towards T5, there is 1320 feet of primary line only. Only two P poles are required in this distance since the next well requires a P & S pole and, therefore, takes care of the primary conductors. A similar procedure is followed for the rest of the lease.

The number of poles required is:

Pole Type	Pole Spacing 440 Feet
S	111
P	10
P & S	33
M	54

TABLE 13

Approximate Installed Costs of Sub-Stations[1]

Substation 3 Phase KVA	NOMINAL SYSTEM—VOLTAGE CLASS							
	2400 Volts		4160 Volts		6900 Volts		11,000 to 13,200 Volts	
	Transf. Costs[2]	Installed Sub Cost[3]	Transf. Costs	Installed Sub Cost	Transf. Cost	Installed Sub Cost	Transf. Cost	Installed Sub Cost
4.5	$ 150	$ 300	$ 160	$ 310	$ 215	$ 380	$....	$....
9	175	325	190	340	245	410	340	520
15	260	410	270	420	340	505	425	605
22.5	320	470	350	500	430	595	....	....
30	370	520	400	550	500	665	590	770
45	455	605	490	640	600	765	700	880
75	630	955	695	1020	800	1150	920	1295
112.5	815	1140	890	1215	1040	1390	1150	1525
150	990	1415	1075	1500	1230	1700	1360	1885
225	1340	1765	1415	1840	1620	2100	1740	2265
300	1650	2225	1745	2320	1920	2550	2040	2715
450	2265	2840	2370	2950	2520	3150	2600	3275
600	2820	3400	2900	3475	3020	3650	3050	3725

Notes:—[1] Based on transformer bank consisting of three single-phase transformers. For 3-phase transformer use above transformer costs for estimating, and adjust installation as necessary.

[2] Transformer costs include lightning arresters and cutouts. Transformer banks connected for **delta-delta**. Lightning arresters for ungrounded service. Transformers below 5 kv with pocket bushings and above 5 kv with two cover bushings. Transformers with taps for a total range of 10 percent.

[3] Installed sub-station cost includes transformers, arresters, and cutouts, material for structure, labor of installation, and overhead. All costs for 1944-1945 period in Southwestern area.

TABLE 14

Approximate Installed Cost of 460-Volt Capacitors

(Cost Basis 1944-1945)

Individual Capacitors for Motors

RATING	Dollars per Kilovar	
	Cost	Installed Cost
5 kvar	10	12.50
Above 5 kvar	7.50	9.00

These are totally enclosed units, weathertight, for outdoor service and include individual fuses.

Group Capacitor Banks

RATING	Dollars per Kilovar	
	Cost	Installed Cost
60 kvar	9.50	11.00
90 kvar	8.50	9.75
120 kvar	8.50	9.75
180 kvar	8.00	9.25

These are totally enclosed capacitor equipment for outdoor service and include individual fuses for each capacitor and a main, manually operated, disconnecting switch.

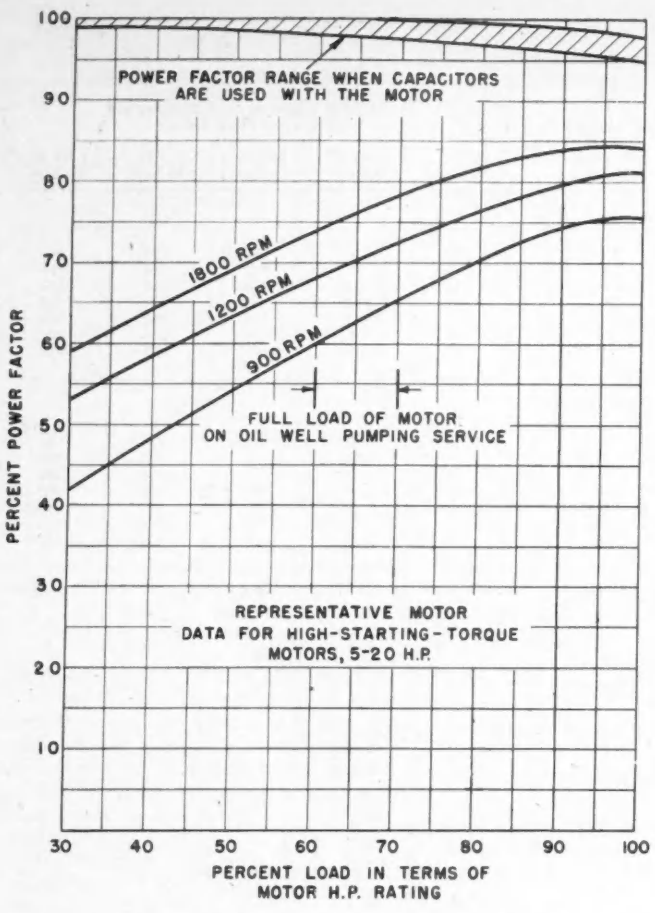

POWER FACTOR RANGE WHEN CAPACITORS ARE USED WITH THE MOTOR
1800 RPM
1200 RPM
900 RPM
FULL LOAD OF MOTOR ON OIL WELL PUMPING SERVICE
REPRESENTATIVE MOTOR DATA FOR HIGH-STARTING-TORQUE MOTORS, 5-20 H.P.
PERCENT POWER FACTOR
PERCENT LOAD IN TERMS OF MOTOR H.P. RATING

Figure 13. Percent motor power factor vs. load for high-starting torque motors.

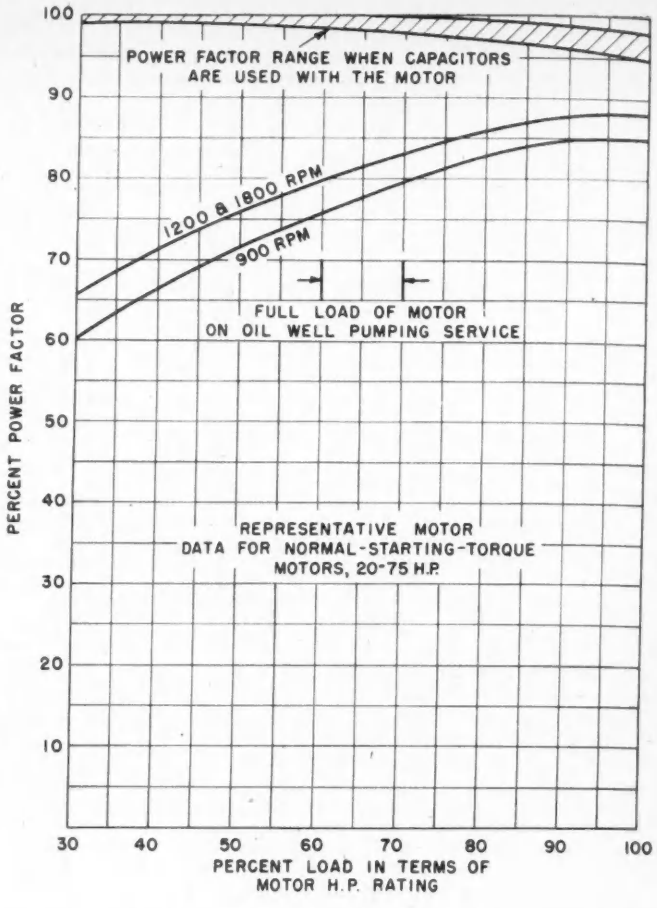

POWER FACTOR RANGE WHEN CAPACITORS ARE USED WITH THE MOTOR
1200 & 1800 RPM
900 RPM
FULL LOAD OF MOTOR ON OIL WELL PUMPING SERVICE
REPRESENTATIVE MOTOR DATA FOR NORMAL-STARTING-TORQUE MOTORS, 20-75 H.P.
PERCENT POWER FACTOR
PERCENT LOAD IN TERMS OF MOTOR H.P. RATING

Figure 14. Percent motor power factor vs. load for normal-starting torque motors.

Pole costs from Table 11 are:

111—S poles at $60 each	$6,660
10—P poles at $70 each	700
33—P & S poles at $80 each	2,640
54—M poles at $80 each	4,320
Total	$14,320

Conductor Costs

Conductor costs are given in Table 12 and include the cost of stringing and sagging.

If the well spacing, 1320 feet, is taken as a unit length, the total conductor costs can be quickly obtained. The total number of unit lengths of secondary conductor is 48 and includes the secondary conductors on the P & S lines. The total for the primary is 16.

Conductor costs from Table 12 are:

Case 1:

48 Unit lengths of No. 1 ACSR at $208	$ 9,984
16 Unit lengths of No. 1/0 ACSR at $240	$ 3,840
Total	$13,824

Case 2:

64 Unit lengths of No. 2 ACSR at $184	$11,776

(Same conductor size used for primary and secondary.)

Sub-Station Costs

The transformer bank ratings are selected on the basis of 9-15 hp motors per substation.

Case 1:

Required transformer bank rating, from Table 6, is 150 kva.

6—150-kva, 4160-volt substations, Table 13, at $1500 each $9000

Case 2:

Required transformer bank rating, from Table 7, is 112.5 kva. (Note that because the load power factor is improved the required transformer bank rating is much smaller than for Case 1.)

6—112.5-kva, 4160-volt substations, from Table 13, at $1215 each .. $7290

Capacitor Costs

For Case 2, the cost of capacitators must be added. From Table 1, for a 15-hp, 1200-rpm, high-starting-torque-type motor a 5-kvar capacitator is the maximum recommended. The cost of capacitors, from Table 14, is $12.50 per kvar, or $62.50 for 5 kvar. The total number of units required is 54 five-kvar capacitors at $62.50 each, or $3375.

The following is a summary of the total cost of the power distribution system for the two methods:

COSTS	Case 1 Without Capacitors	Case 2 With Capacitors
Poles	$14,320	$14,320
Conductors	13,824	11,776
Substations	9,000	7,290
Capacitors	.....	3,375
Total	37,144	36,761
Add 10% for Misc.	3,714	3,676
Total Cost	40,858	40,437
Estimated Cost per well	755	750

In addition to the lower system investment with capacitors, there will also be realized an annual saving in system losses. This saving in losses, including the primary and secondary lines and transformers, is approximately 16 kilowatts. If power costs 1 cent per kilowatt-hour, then the savings in energy losses are:

$14 \times 8760 \times \$ .01 = \$1602$ per year.

If full use can be made of the tap range in the transformers then the most economical arrangement on a first cost basis will be one using No. 2 ACSR for both primary and secondary lines and without capacitors. However, even so, capacitors are economically attractive since they pay for themselves due to savings in system losses alone in slightly less than 2½ years, or a rate of return on the capacitor investment of 43 percent.

If a power-factor clause is included in the rate structure, then Case 2, which includes capacitors, will be even more attractive.

Next Week . . .

"Controlled Directional Drilling of Wells"

By G. L. KOTHNY

Sperry-Sun Well Surveying Company

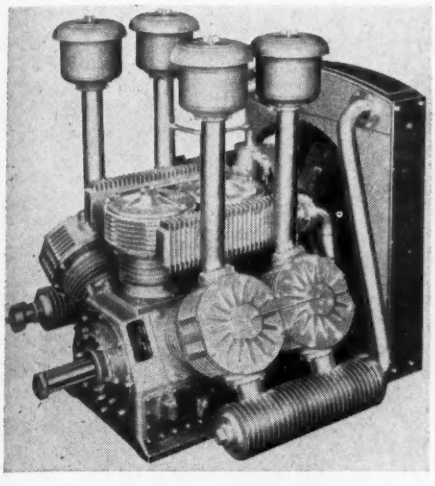
Don't Miss It!

NEW EQUIPMENT LITERATURE

For additional information, use mailing card inserted opposite this page

1—Compressors

A new line of air-cooled, portable compressors has been recently announced. The series include five models of 60, 105, 160, 210, and 315 cubic feet per minute capacity. All units are of the V-type cylinder design except the model



315. The latter is of "W" construction with four low-pressure and two high-pressure cylinders. These units operate at relatively slow piston speeds through the use of short piston strokes.

Aluminum alloy compressor heads and manifolds are utilized in all models to make possible cooler compressor operation and permanent freedom from valve carbonizing. The use of an aluminum crankcase also makes possible substantial weight savings. Other salient features of this compressor are heavy-duty double-row ball-bearing crankshaft mounting, full force feed lubrication and individual air cleaner for each low pressure cylinder. The latter are said to provide cooling of cylinders and heads during the compressor idling period.

Equipped with constant peak performance lifetime valves, the new models are available in industrial departmental, skid, steel wheel, pneumatic tired trailer, and flanged wheel units.

Davey Compressor Company, Kent, Ohio.

(Check item 1 on postcard for more information.)

2—Lubricator

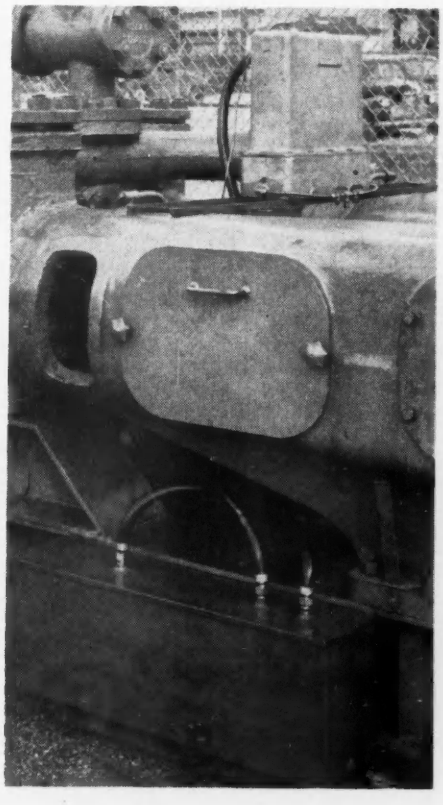
Recently introduced is a vacuum-operated lubricator designed to provide continuous gravity flow to the piston rods of both steam-driven and power pumps. Designated the "Little Gusher," this device provides continuous lubrication to any part of the pump or other equipment.

The complete unit consists of two separate parts: the lubricant storage reservoir or sump, and the lubricator. The sump is a rectangular steel tank, 8 by 12 by 36 inches, placed at some convenient location below the points of lubrication so that excess lubricant may be returned to the system. In addition to being a reservoir, it also acts as a purifier to separate entrained water or foreign particles from the oil. A fine-mesh screen inside the sump strains returning lubricants. An internal overflow takes off water separated from the oil. The lubricant is drawn from the sump into the lubricator through a Neoprene hose by means of a vacuum (about two inches mercury minimum) provided by a connection to the intake manifold of the driving engine (on power pumps) or by a small steam Venturi jet (in the case of steam pumps).

The lubricator itself, 7 by 18 by 18 inches, of aluminum, is mounted above the piston rods as shown. It is divided into two separate chambers connected only a ¾-inch check valve. The lower chamber, which is always filled with oil in normal operation, is connected to the points of lubrication by ⅜-inch copper tubing. This flow chamber is always opened to the atmosphere by an internal ⅜-inch pipe fitted with a weather-proof cap mounted on top of the lubricator. The vacuum is pulled on the upper chamber wherein the lubricant is first drawn. As the upper chamber is filled, a float-controlled toggle valve opens the chamber to the atmosphere, breaking the vacuum and stopping the suction of oil from the sump. The check valve allows a continual flow of oil from the upper suction chamber to the lower flow chamber, but prevents any vacuum being applied to the lower chamber.

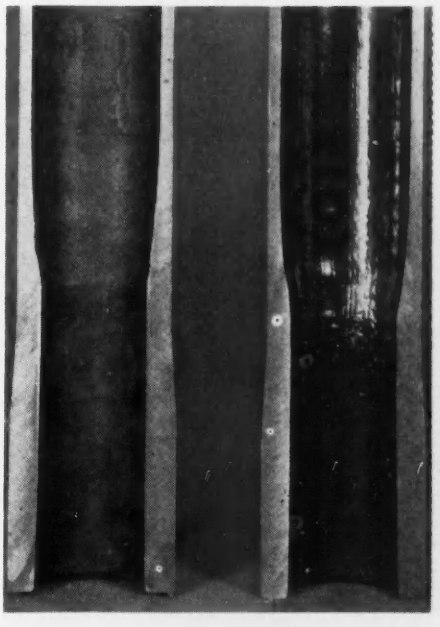
Ryco Tool Works, 1928 Miller St., Houston.

(Check item 2 on postcard for more information.)



3—Plastic Coating

A new development in plastic coating of pipe has been devised to combat corrosion and corrosion fatigue in drill pipe. Studies in the field and laboratory have indicated that plastic coating of



drill pipe will overcome the corrosive affects of salt water and other corrosive agents encountered in drilling for oil. The plastic coating, as applied on the inside of drill pipe, is said to be acid-resistant, impervious to oil and water, chemically stable, withstands temperatures up to 400° F., will resist mild abrasion, and will not become brittle or flake off.

Drill pipe is first shot-blasted on the inside and then upended in a rack where the liquid plastic is forced up inside the pipe until it reaches the top. The plastic is slowly drained to prevent the formation of air bubbles or streaks. After a short drying period at normal temperatures, the pipe is placed in an oven where the plastic coating is baked on. Four coatings of the plastic are applied.

In the case of oil well drill pipe, only the inside is coated, for it has been found that continual rotation of the pipe in the hole burnishes the outside to prevent the concentrated attack of corrosive agents.

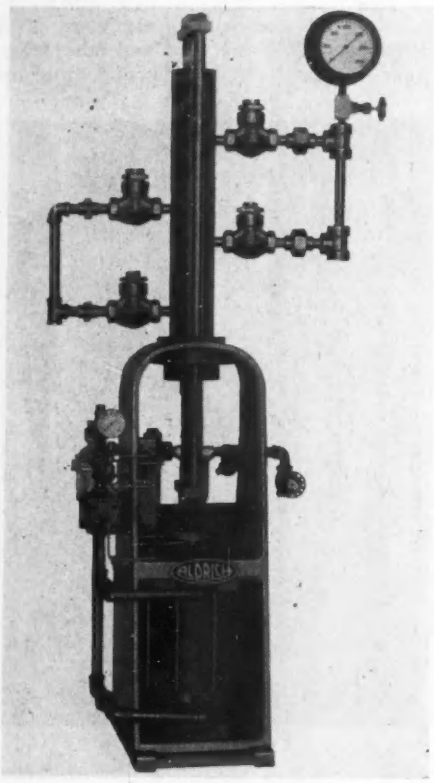
Developed by Spang-Chalfant Division, The National Supply Company, Pittsburgh.

(Check item 3 on postcard for more information.)

4—Power Unit

Designed to provide low-volume, high-pressure service is a new hydropneumatic power unit. Powered by a small quantity of compressed air, it is capable of producing fluid pressures up to 20,000 pounds per square inch. Wire drawing through relief valves and the constant

need for adjustment are said to be eliminated since the pump stalls when the desired hydraulic pressure developed corresponds to the air pressure used. Pump delivery is not displaced through a relief valve because the valve is located in the air supply line.



Various pressures are obtained by simple adjustments of the air supply. The power unit is operated by a vertical double-acting air cylinder and piston that is direct-connected to the upward-acting pump plunger and yoke—connected to the downward-acting plunger. The pump cylinders are opposed and are of integral construction. On hydraulic demand, the pump begins operating and continues until air and hydraulic pressures are equalized. Being vertical, little floor space is required. By specifying proper ratio of air piston to hydraulic plunger, hydraulic pressures up to 20,000 psi may be obtained with a maximum air pressure of only 100 psi. The pump is not intended for use where continuous flow of liquids is required.

The Aldrich Pump Company, Allentown, Penn.

(Check item 4 on postcard for more information.)

5—Centrifugal Pumps

Four new multi-stage centrifugal pump sizes are available for wells equipped with 5½-inch outside diameter casing, completing a full range of capacities and lifts. All are designed for use with submersible electric motors.

Designated as Types ZB-12, SA-23, W-32 and I-47, these pumps range in capacities from 250 to 2500 barrels per day, and lift up to 14,000 feet at 250 barrels per day. Some of the various lifts and capacities, for example, are 1250 barrels per day for as great a lift as 4000 feet and 2500 barrels per day for lifts up to 1500 feet.

Standard equipment includes grey iron diffusers, bronze impellers, steel shaft, and seamless steel housing. Available on special order for corrosive well conditions are Monel shafts and Ni-Resist diffusers. Pumps so equipped are usually coated with a plastic protective coating.

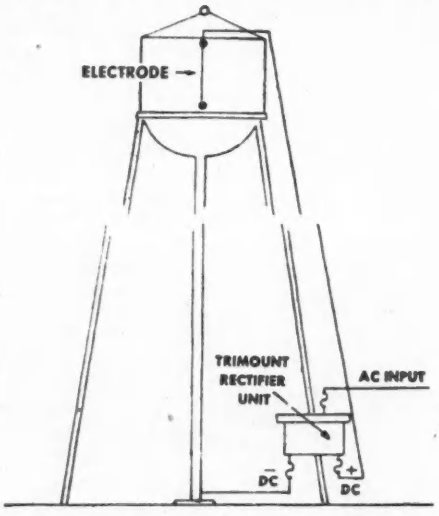
When intermittent pumping periods are necessary, switchboards are available which provide completely automatic operation, shutting down and restarting at predetermined time intervals. Available in all the above types is a new gas separator mechanism, the function of which is to separate the gas from fluids entering the pump and returning the separated gas to the casing annulus. This effects a saving in gas by allowing the gas to be produced through the casing and also serves to eliminate gas locking in the pump.

Manufactured by Reda Pump Company, Bartlesville, Okla.

(Check item 5 on postcard for more information.)

6—Rectifier Unit

A new cathodic rectifier unit has been developed to protect steel water tanks and deep well pumps against rust or corrosion due to electrolytic action between the ground and the metal. Normally, the steel tanks or pumps act as a galvanic battery, wherein the water becomes the electrolyte. The submerged portions of these pieces of equipment form the anode which is subject to rapid rusting, pitting or corrosion. The cathodic rectifier causes a small current to flow in the reverse direction to counteract the galvanic action between the tank and the water by introducing a cathode which is charged by the rectifier. This reversal of current makes the tank or pump act as the cathode to prevent corrosion of these parts.



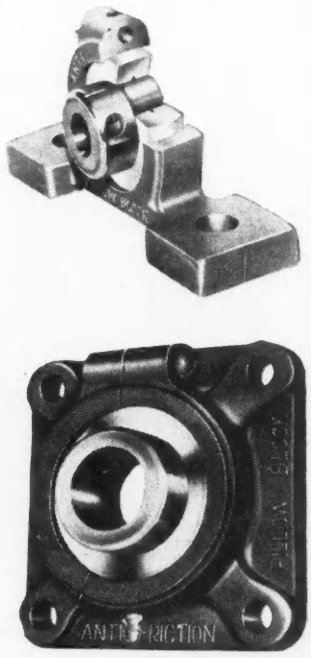
The equipment is housed in a weatherproof steel cabinet which may be conveniently located. Normally, the unit operates from 110-volt, 60-cycle alternating current, but it can be furnished to operate on other voltages.

Trimount Instrument Company, 37 West Van Buren Street, Chicago 5.

(Check item 6 on postcard for more information.)

7—Pillow Block

The "Imperial" self-aligning bronze pillow blocks and flange units have been designed to give a rigid bearing which takes either radial or thrust loads in a wide range of sizes. These units consist of three basic parts: a split high-tensile strength aluminum housing, a spherical Naval bronze bearing, and a ground adapter sleeve. The adapter sleeve is inserted into the bronze bearing so that one basic pillow block can serve a number of shaft diameters. After the shaft has been located, the housing is clamped on the spherical, self-aligning bronze bearing.



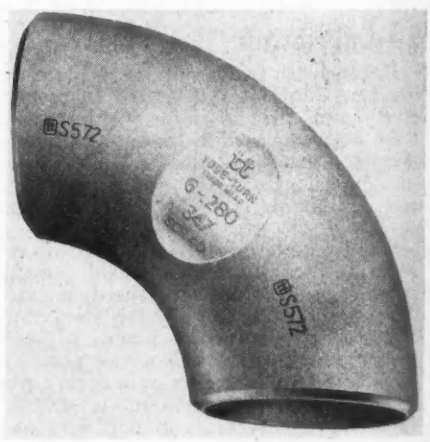
The new line of pillow block and flange units includes sizes from 5/6-inch to three-inch shaft diameters in both the pillow block and flange units for service up to 5000 revolutions per minute.

Anti-friction Bearings Company, 2020 S. Figueroa Street, Los Angeles 7.

(Check item 7 on postcard for more information.)

8—Welding Fittings

A new line of stainless steel welding fittings was recently announced in grades



that were found to meet about 95 percent of industry's standard requirements.

The line includes 180-degree long radius returns, 90-degree long radius elbows, 45-degree long radius elbows, straight tees, reducing outlet tees, caps, eccentric reducers, concentric reducers, lap joint stub ends, laterals and crosses, all in standard and extra heavy weights; and welding neck flanges, slip-on flanges, threaded flanges, blind flanges, socket-type welding flanges, reducing flanges, orifice flanges and lap joint flanges. Sizes range from ¾-inch to 12 inches in diameter.

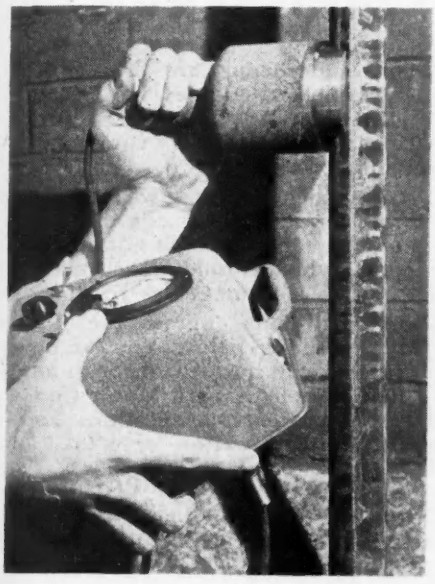
These stainless steel fittings are said to resist atmospheric corrosion, acids, chemicals, scaling at high temperatures, in addition to being strong and ductile at sub-zero and elevated temperatures.

Welding Fittings Division, Tube Turns, Inc., Louisville, Ky.

(Check item 8 on postcard for more information.)

9—Thickness Gauge

A new thickness gauge, type MS-A, is designed to measure the thickness of iron or steel pipes from the outside. Called a pipe thickness gauge, the instrument can be used on pipes up to



¼ inch in thickness and from one to two inches in diameter. Applications suggested include checking the safety factor of pipes and tubing carrying petroleum products, chemicals, steam or gas.

The device consists of an indicating instrument, a gauge head, and a saddle which is connected to the gauge head by two screws. A different saddle is required for each diameter of pipe. In use, the saddle is placed upon the pipe, and thickness is indicated in fractions of an inch on the indicating instrument.

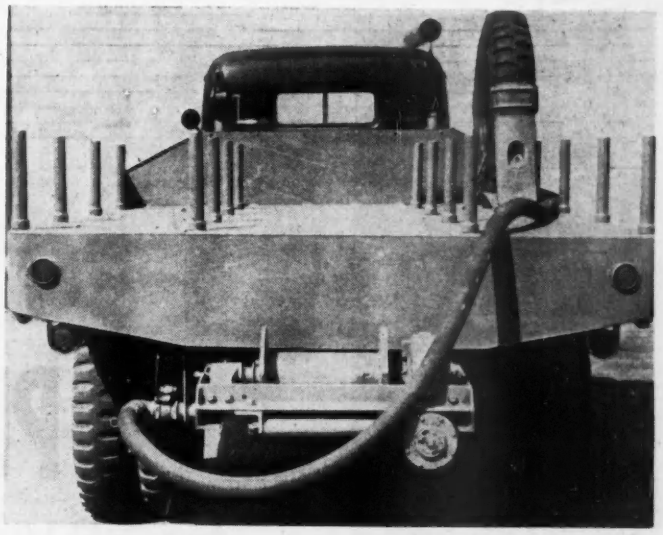
The gauge measures the average thickness of a pipe over an area several inches square. Accuracy of plus or minus 1/64 inch is claimed on clean surfaces, and 1/32 inch on dirty surfaces. Dirt, scale, and paint on the inside of the pipe do not add to the thickness reading. The gauge head and saddle combination weigh about 6½ pounds. The instrument requires 115-volt, 60-cycle alternating current source.

Special Products Division, General Electric Company, Schenectady, N. Y.

(Check item 9 on postcard for more information.)

10—Dual-Purpose Truck

A dual-purpose water truck provides water for drilling shallow holes and may be used to carry pipe and other material. Having a capacity of 550 gallons, this tank has an appearance similar to a regular truck bed and rises only eight inches above normal bed level. It may be furnished with additional tanks to increase the capacity to 650 gallons if desired. Dimensions are 6 feet, 6 inches wide and 10 feet, 10 inches long, with a bottom having a gentle radius forming a five-inch drop at the center to provide increased strength. The special alloy sheet steel used is light but high in tensile strength. Cross members supporting the flat-top platform act as baffles. Removable stake pockets are provided for partitioning the truck when hauling drill pipe.



On the forward 13 inches of the flat deck is an enclosure 16 inches high that contains space for a 35-gallon gasoline tank (if desired) and two smaller tool boxes at each side. Space is also provided for the vacuum loading device which is driven directly from the truck motor. It is said to load the 550-gallon tank in approximately 15 minutes. The loading device has sufficient vacuum to lift water 28 feet at sea level or approximately 14 feet at an elevation of one mile. Extra equipment include the No. 18 Tulsa winch; heavy-duty, extra-large radiator; extra-heavy front bumper; fish plating inside the frame; running boards; special muffler mounted over the cab; and "Hydrovac" booster brakes.

The Winter Weiss Company, 2201 Blake Street, Denver 2.

(Check item 10 on postcard for more information.)

Literature

11—Rod Liner Pumps

"D & B" rod liner pumps are thoroughly described by a new, four-color, 24-page booklet, Bulletin 611-A. Features of the rod liner pumps are presented in illustrations which show individual parts.

By means of sectional drawings and retouched photographs, the following types are described: (1) stationary barrel rod liner pump with simplex bottom lock hold-down, (2) stationary barrel rod liner pump with simplex top lock hold-down, (3) stationary barrel rod liner pump with three-cup bottom hold-down, (4) stationary barrel rod liner pump with a three-cup top hold-down, (5) traveling barrel rod liner pump with simplex bottom lock hold-down, (6) traveling barrel rod liner pump with three-cup bottom hold-down, and (7) traveling barrel champion pump with three-cup bottom hold-down. Locks and shoes of the "D & B" pumps are similarly illustrated.

The booklet includes mathematical calculations and data for calculating well production.

D & B Division, Emsco Derrick & Equipment Company, Dallas.

(Check item 11 on postcard for more information.)

12—Welding

A new publication is a 64-page general welding and cutting products catalog. Profusely illustrated, it is divided into two sections: one for oxyacetylene welding and cutting gases, equipment and supplies; the other for arc welding machines, accessories and electrodes. The last ten pages are devoted to specially compiled electrode price lists.

Air Reduction Sales Company, 60 East 42nd Street, New York 17.

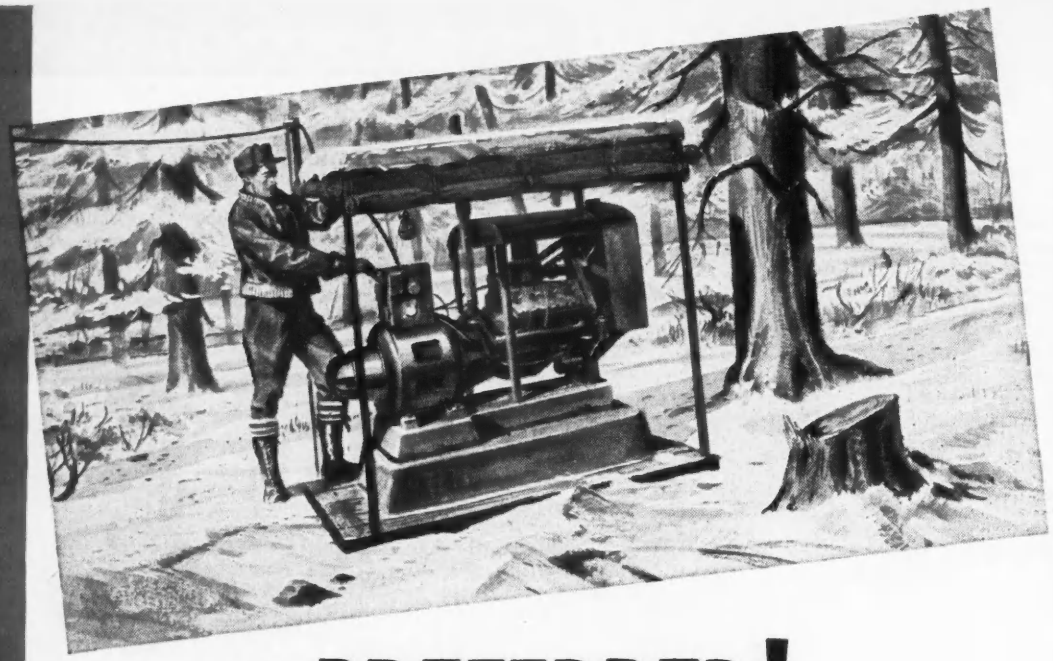
(Check item 12 on postcard for more information.)

13—Rubber

Laboratory performance tests comparing natural rubber and synthetic "Buna S" rubber are contained in a new booklet entitled "Our Third Report to Industry on Simplex Synthetic Rubber Insulations." Tests made to determine the desirability of insulation materials were given to both substances and results of each test are tabulated for comparison. Such tests as performance insulation, heat resistance, ozone resistance, low water absorption were applied.

Simplex Wire & Cable Company, 79 Sidney Street, Cambridge 39, Mass.

(Check item 13 on postcard for more information.)



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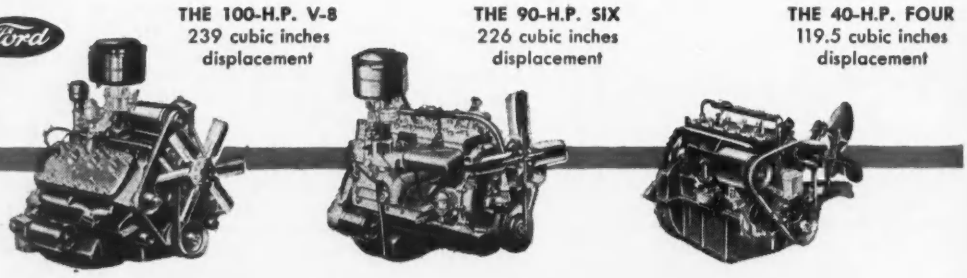
Ford

THE 100-H.P. V-8
239 cubic inches displacement

THE 90-H.P. SIX
226 cubic inches displacement

THE 40-H.P. FOUR
119.5 cubic inches displacement



FORD-BUILT ENGINES

FOR INDUSTRIAL AND MARINE POWER

Patent Roundup

A Regular Feature of
THE OIL WEEKLY

Patents recently issued by the United States Patent Office, Washington, D. C. include those listed below.

Printed copies of the patents listed are furnished by the Patent Office for 25 cents per copy and can be had by addressing the Commissioner of Patents, Washington 25, D. C.

Indicator for Valves

An indicator device for a non-rising stem valve or the like (No. 2,407,944) has been patented by Charles H. Bassett, Chicago, Ill., and assigned to Crane Company of Chicago.

The device has a seal or packing element, an operating stem actuated by a means provided with a lower depending hub portion on which is fixed an externaly threaded sleeve. An internally threaded pointer is mounted for relative rotation on an axial movement along the threaded sleeve, the rotation and axial movement being responsive to rotational movement of the sleeve. A graduated indicator plate coacts with the pointer to prevent rotational movement of the pointer but provides axial movement and indicates the position of the valve gate at and between its open and closed positions.

Cathode Structure

Paul Georges Chevigny, New York, has assigned this patent (No. 2,411,506) to Federal Telephone and Radio Corporation, Newark, N. J.

This cathode for electron discharge devices is a combination of a supporting member within and around the circumference of which positioned rods are mounted, with a ring extending about and attached to all the rods; a closely spaced spiral winding extending around the rods and supported by the ring and unattached to the rods; and a second ring extending about and attached to all the rods at the other end of the spiral winding to hold the winding in place on the rods between the two rings.

Well Signaling System

This patent (No. 2,411,696) was issued to Daniel Silverman and Thomas Gilmartin, Tulsa, and assigned to Stanolind Oil and Gas Company, Tulsa.

Extending into the well is an uninsulated conductor whose lower end is surrounded by a core of magnetic material and coupled to a second core of magnetic material by a first coil of insulated wire. The second core is also surrounded by a second coil of insulated material. The two cores are spaced well apart. There are two separate means, one for producing pulsating electromotive signals and the other for detecting those signals. One of the means is connected to the first coil and the other means to the second coil.

Snatch Block

Patent No. 2,411,625 was issued to John C. Jacques, Denison, Texas, and is unassigned.

A pulley is journaled between a pair of side plates, each of which has a slot spaced from the pulley with a one-piece latch block disposed in the slots and having a boss between the ends of the block, engaging when in an operative position and preventing the plates from being forced together. Bearing portions on the latch block engage the plates and lugs on the latch block beyond the bearing portions engage the outer sides of the plates to prevent the spreading of the plates. The lugs and boss form a part of the one-piece latch block. Bars secured to the ends of the latch block are spaced from the side plates, one of the plates having an additional slot for the passage of one of the bars to allow lateral shifting of the latch block to open the snatch block, the bars permanently confining the block within the slot of one plate.

Tax Forum Planned

The annual federal tax forum of the Mid-Continent Oil and Gas Association will be held on the mezzanine floor of the Washington-Youree hotel in Shreveport January 23-25, according to Sam S. Caldwell, executive vice president and director of the Louisiana-Arkansas division of the association. T. H. Marshall and E. E. Hunter, general chairman and vice chairman, respectively, of the association's standing committee on federal taxation, will preside at the forum, it is announced.

Why not the Best in Swivels?

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KING SWIVELS 53-GA, 32-GA AND 20-GW

Types 32-GA, 53-GA and 20-GW swivels are alike in general design, but vary somewhat in detail.

These swivels have been field proven by several years of service and have been accepted as leaders in their class. They are in service throughout most of the oil world.

There are no other swivels which are comparable on a basis of capacity in proportion to weight.

Their high capacity in relation to their lightness make them ideal for use in remote and inaccessible places.

The 53-GA is used for drilling medium depth oil wells; also used extensively on work-over rigs. It is an ideal swivel for slim hole drilling.

The 32-GA is used with large water well rigs and for drilling relatively shallow oil wells. It is also used with long strings of tubing for washing down and similar operations.

The 20-GW swivel is used for drilling shallow and medium depth wells. The 20-GW is the smaller of the three and is used on water wells, core drilling rigs and the heavier types of Geophysical Rigs. It is also suitable for handling tubing in the shallower oil fields.

THE PRINCIPAL USES OF THESE SWIVELS ARE:

1. **Drilling shallow and medium depth oil wells.**
2. **Drilling water wells.**
3. **Core Drilling and Geophysical Drilling.**
4. **For slim hole drilling.**
5. **Working over oil wells.**
6. **Washing down pipe and tubing.**
7. **Running with inside pipe cutting tools.**
8. **Running with fishing tools.**
9. **As all purpose, lightweight swivels.**

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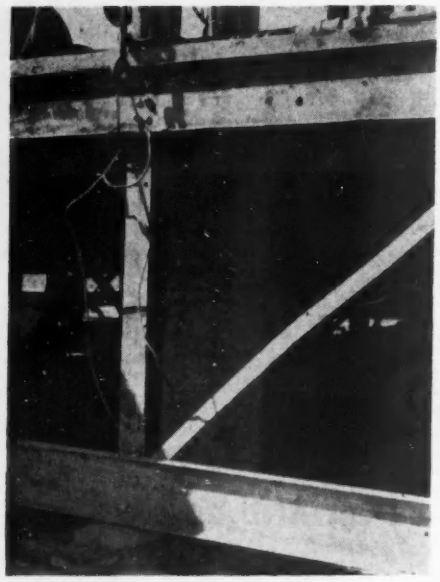
HOUSTON 10, TEXAS

Inexpensive Conductor Pipe Used In Drilling Rat Hole



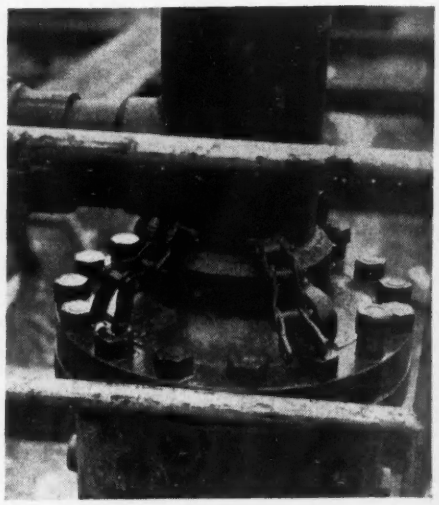
$5.00 is paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, P. O. Box 2608, Houston 1, Texas

RAT HOLE EQUIPMENT

It is only after rigging up in an area where it requires eight hours or longer merely to dig the rat holes, that a contractor can appreciate the comparatively easy, routine drilling in other areas. Such is the case in a Colorado field, where due to the long time required for making a rat hole, special provisions must be made for conserving costly drilling mud and in assuring complete returns. One contractor provides an inexpensive answer to the rat hole conductor pipe phase of the problem by cutting out the tops and bottoms of several oil drums and welding the shells together for installation in the manner shown.

Buried a foot or two in the ground, the oversize pipe is slanted to the same degree as the rat hole pipe will be, and is provided with an expansion joint outlet for conveying returns over to the mud tanks. In this particular area conservation of drilling mud is high on the list in the order of importance, due not only to frequently occurring periods of lost circulation, but in the great distance over which materials are hauled. Any device or technique which will help conserve materials, such as the one pictured, soon has its original cost repaid many times over.

Preventer Snubbing Links



BLOW-OUT EQUIPMENT

A safety precaution and a time-saving idea employed by the drilling department of one company consists of attaching to the blowout preventer head four short lengths of rotary chain. welded to the head as illustrated, the links provide a quick means of snubbing down the well-head assembly during an emergency as well as for routine tying down while rigging up at new locations.

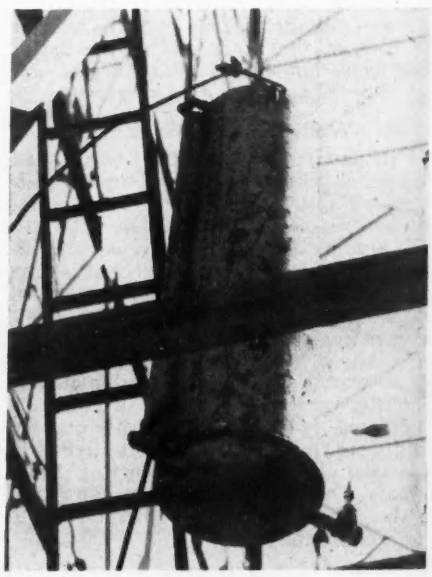
The links do not interfere with routine assembly work, and similar installations may be made on other of the high pressure well fittings. Time taken to prepare such fittings before they are taken out to the well may be instrumental in saving of considerable time at the location, not only in lifting and handling the unit, but in rigging tie-down lines.

Rollers On Tong Counterweight Reduce Friction

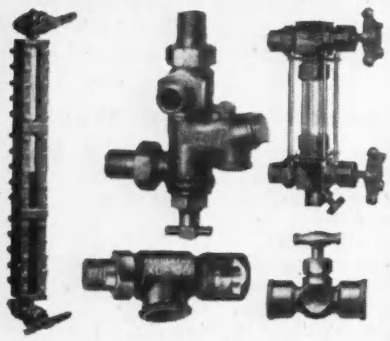
COUNTER-WEIGHTS

Free-falling tong counterweights will greatly ease the task of derrick floor men while running in or coming out of the hole with a long string of pipe. Helping to reduce much of the friction normally found in counterweight guide lines is the novel system developed by one company. At the top and bottom of the two-inch pipe welded to the back side of the water container were attached the roller-end portions of salvaged rotary chain links as shown. The line is strung in through the lower link, on through the pipe section and out across the upper roller.

This method has an advantage over the rigid type of installation wherein the weight slides up and down a vertical pipe, and which must be heavily greased at frequent intervals. Only the two light rollers need be lubricated in the present assembly, and in addition, the line has only point contact with the rollers, still further reducing line friction. The long-lived rollers require little attention but when replacement is necessary, they can be removed and others installed with little work. The length of pipe through which the line runs serves as a guard against anyone becoming entangled in the line, and as a bumper when or if the weight swings back into the derrick or tools on the floor.



PENBERTHY
QUALITY
PRODUCTS



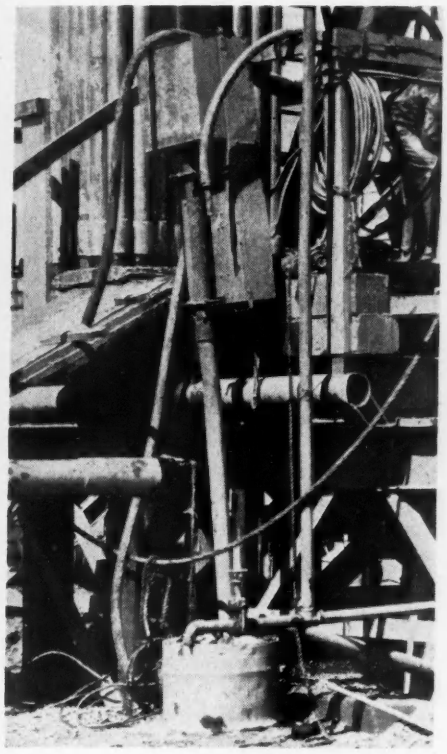
Penberthy liquid level gages of various types—injectors—ejectors—all so widely used throughout the oil industry because they have always been dependable under the most severe service conditions.

All are of rugged construction and made by an organization with 57 years experience in the manufacture of quality products.

See Pages 3126 to 3131 Composite Catalog

PENBERTHY INJECTOR CO.
DETROIT, MICH. Canadian Plant WINDSOR, ONTARIO

Weight Indicator Mounted On Independent Stand

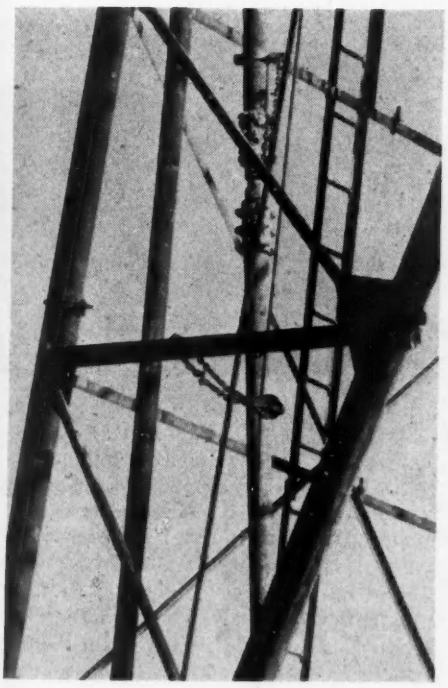


On small, portable rigs the amount of available floor space is limited and must be used efficiently. To aid in this situation in providing a maximum of space on the derrick floor, one drilling contractor using the cantilever-type drilling mast set the weight indicator off the substructure, but in easy view of the driller and crew.

INDICATOR SETTING

The support, as illustrated, consists of a section of 2½-inch pipe of sufficient length to bring the indicator up to a level where it is clearly visible to the driller. It is clamped in position by two U-bolts mounted on the indicator. The footing of the support is a half barrel container filled with concrete in which the supporting pipe is set. This device forms a sturdy means of supporting the indicator outside the derrick floor where it is easily seen from most parts of the working area and where it is not subject to incessant vibrations of the draw works and engines. This indicator support may be carried from well to well as made up . . . the indicator being unclamped and carried separately to prevent it being knocked about.

Small Pulley Prevents Kinking Rotary Hose

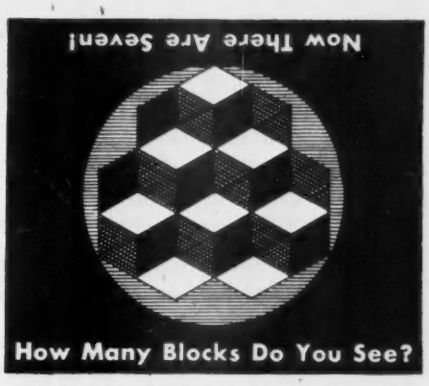


Overtravel of the block when coming out of the hole with pipe can seriously damage the mud hose connection where it is attached to the standpipe gooseneck unless some type of protection is afforded the unit.

EQUIPMENT CARE

One contractor prevents the sharp kinking effect which overtravel puts in the hose at the end of the coupling by suspending a snatch block to run on the hose just below the end of the fitting. The block is attached to the derrick girt with a short chain, so that the unit may shift readily with the hose as it conforms to strain placed on it when elevating the traveling block.

The snatch block affords a curved surface over which the hose is bent when the lift is run too high, putting a smooth curve into the hose instead of applying the load directly against the end of the coupling sleeve. As the block is free to move along the hose, it is seldom that the curve formed by overtravel falls twice in exactly the same spot, greatly extending the life of the hose at the point where—under normal operation—failure is most apt to occur.



That's right, six—but turn the page upside down and look again.

BAKER CEMENT RETAINERS are like that, too. You think you know all of their important applications—such as Re-cementing; Reducing Gas/Oil Ratios; Plugging Off Bottom Fluids; Squeeze Jobs; Cementing Bad Pipe; Plugging Back to Upper Zones; Testing Upper Cased Formations. And then, you find it can also be used as a successful Casing Bridge Plug or to Cement Off to Perforate for Productions. It might pay you to look on page 328 of the Composite Catalog, and it won't be necessary for you to turn the page upside down either.

Here is the Real All-Purpose Jack!

No. 310A: 15-tons capacity; height 22"; lift 14"; toe lift min. 2¼".

For the number of jobs the Simplex No. 310A Jack handles safely and economically in oil field work, *it's the unquestionable All-Purpose Jack.* Lifts, lowers, pulls or pushes full 15 tons on cap, toe, auxiliary shoe or chain. Operates at any angle.

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Better, Safer Jacks Since 1899

Sterling
PUMPS • HOISTS • LIGHT PLANTS

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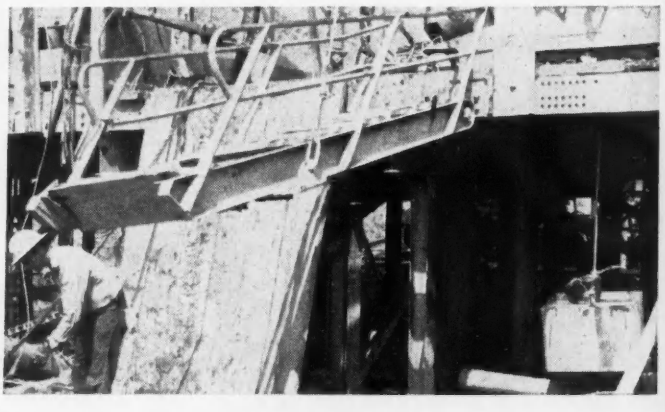
Monorail And Trolley Facilitate Boiler Repair

CARE BOILER

On-the-job servicing or overhauling of boilers is more rapidly accomplished by one drilling department through use of a monorail and trolley mounted across the top of the smokebox end of the battery. The track consists of a single length of small mine rail which is supported at each end by a projection welded to the sides of well-braced pipe uprights. A single-wheel trolley, having a steel loop suspended below it, may be moved over to the front of any boiler. With the aid of a small block and tackle or chain hoist, the heavy covers may be removed and rolled some distance away from the particular boiler being worked on, thus leaving considerably more working room and correspondingly faster work in getting the unit back into operation.

Also aiding in the speeding up of such operations, the elevated board walk which runs the full length of the battery permits faster runoff of water and assures generally improved working conditions.

Rig Floor Stairway Hinged And Counterweighted To Provide Convenience In Handling Tubular Goods



WALKWAYS

In order to facilitate movement and handling of tubular goods along the rack and walkway, one company has adopted the use of a steel stairway that is hinged at the derrick floor edge and which can be raised up off the walk as shown in the photograph. A counterweight beneath the floor simplifies raising and lowering of the unit. The counterweight line is strung from the side of the stairway, up over a sheave located in the uppermost point of the V-window in the rig, then down through the floor to the counterweight. The latter consists of a square steel container 18 inches high by 24 inches square, fitted with a bail and which, when filled with water, has just sufficient weight to counterbalance the weight of the stairway.

The stairway is sturdily made of I-beam material fitted with angle iron clips over which are laid plank steps, the latter being non-skid and at the same time lighter than steel treads. A removable hand railing is set in sockets on either side of the stairway. Advantages of this type of installation are numerous, not only when handling pipe materials during drilling, but in the simplicity of disassembling for moving to another location.

INTERNATIONAL CRAWLERS
Push Up Your Profits

THIS International TD-14 Diesel moved more than 5,000 yards of earth in 35 hours of operation—more than 135 yards an hour—with a minimum fuel consumption.

Owned by the Monarch Construction Company of Oklahoma City, this International is one of two TD-14's operated by the company. "They're highly satisfactory and we're mighty proud of them" is the way Monarch speaks of its Internationals.

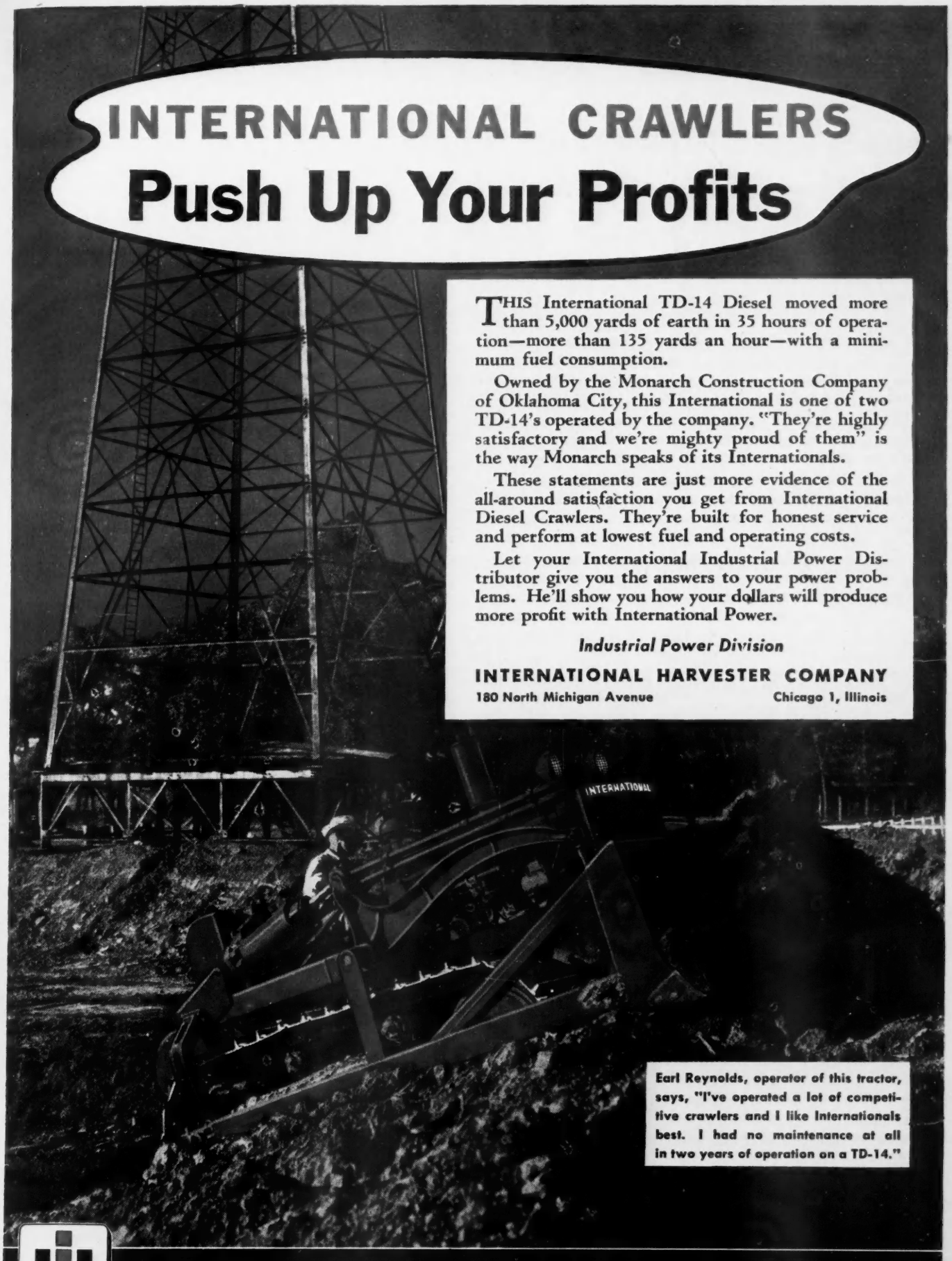
These statements are just more evidence of the all-around satisfaction you get from International Diesel Crawlers. They're built for honest service and perform at lowest fuel and operating costs.

Let your International Industrial Power Distributor give you the answers to your power problems. He'll show you how your dollars will produce more profit with International Power.

Industrial Power Division

INTERNATIONAL HARVESTER COMPANY

180 North Michigan Avenue Chicago 1, Illinois



Earl Reynolds, operator of this tractor, says, "I've operated a lot of competitive crawlers and I like Internationals best. I had no maintenance at all in two years of operation on a TD-14."

INTERNATIONAL HARVESTER

INTERNATIONAL POWER

CRAWLER TRACTORS • WHEEL TRACTORS • DIESEL ENGINES • POWER UNITS

Gasoline and Distillate Fuel Output Down; Residual Fuel Yield Gains

Decreased output of gasoline and distillate fuel and a slight upsurge in residual fuel production were reported in the weekly bulletin of The American Petroleum Institute for the week ending January 4. Daily average crude flow and crude runs to stills were off slightly.

The severe cold weather had a decided effect on all stocks. Gasoline stocks were up considerably as automobiles were stranded by ice and snow while heavy demand for burning oils resulted in stock reductions.

Crude output averaged 4,649,000 barrels daily during the week, a decline of 64,000 a day when compared with the previous week's flow, and 101,000 barrels or 2.2 percent over that of the comparable week last year.

Runs to refinery stills were off 51,000 barrels daily, averaging 4,615,000 barrels daily during the week. However, this was 302,00 barrels daily or 6.5 percent greater than last year.

Crude stocks totaled 225,995,000 barrels on December 28, 1946, the Bureau of Mines reported. This was a decline of 116,000 barrels during the week but still 7,077,000 barrels or 3.2 percent over the like week a year ago.

The week's output of gasoline was 15,281 barrels, a decline of 323,000 barrels from the previous week. However, the production was 1,242,000 barrels, or 8.8 percent, greater than the comparable week's output in 1946. Stocks of finished and unfinished gasoline amounted to 94,-964,000 barrels, a gain of 1,838,000 barrels over last week. The inventories are still 4,429,000 barrels, or 4.5 percent under stock of January 5, 1946.

Distillate fuel production was reduced during the week by 74,000 barrels to a total of 5,857,000 barrels but remain 8.8 percent or 472,000 barrels over the output of a year ago. In face of the heavy demand, stocks dropped 907,000 barrels in the week to 58,034,000 barrels and were 23,036,000 barrels or 65.8 percent greater than the like week in 1946.

Residual fuel production rose 194,000 barrels to reach 8,375,000 barrels while stocks dropped 142,000 barrels to amount to 53,285,000 barrels. These stocks now are 11,626,000 barrels or 27.9 percent above the total in storage a year ago.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod.		Runs to Stills		Crude Stocks		Gasoline Stocks		Gasoil and Distillate Stocks		Residual Fuel Oil Stocks	
	Barrels Daily	Week Ended	Barrels Daily	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended
Highs:												
1941	4,337	11–22	4,120	10–18	266,187	3–29	99,727	3–29	54,983	11–15	102,448	1– 4
1942	4,337	2– 7	3,961	1– 3	263,208	3–28	[1]109,281	3–14	47,861	11–14	95,857	1– 8
1943	4,436	11–13	4,331	12– 4	245,752	5–29	94,159	3–20	47,187	11–27	72,881	1– 2
1944	4,762	9–30	4,798	12–30	240,992	1– 1	89,162	4– 1	48,162	10–28	64,744	10– 7
1945	4,944	7–21	[5]5,140	8–18	227,554	10–13	99,012	3–24	45,341	11–17	56,074	1– 6
1946	[4]4,961	6–15	4,968	12–28	229,430	3– 2	105,233	2–16	[6]67,286	11– 9	61,636	11– 2
Lows:												
1939	[3]1,601	8–26	3,125	2–18	[2]229,127	10–12	71,152	10– 7	20,722	4–15	105,397	4– 3
1941	3,364	1–11	3,490	1–18	240,399	11–15	79,923	10– 4	28,382	4–12	90,914	7–13
1942	3,297	7– 4	3,393	5–23	231,896	12–12	75,934	12– 5	29,240	4–25	72,962	12–26
1943	3,821	1– 9	3,579	3–18	232,191	1– 9	68,182	10–16	30,732	4– 3	57,596	12–25
1944	4,357	1– 1	4,228	2–12	220,258	9– 9	76,302	1– 1	30,232	4–19	49,737	3–18
1945	3,621	10– 6	3,409	10–6	[4]211,813	8–25	70,791	10–13	26,483	3–17	38,548	5–26
1946	4,403	3– 9	4,498	1–12	218,193	1– 5	85,324	9–28	25,131	3– 9	37,289	4– 6

TRENDS OF 1946

Trends in Week Ended	Crude Oil			Gasoline		Gasoil and Distillate		Residual Fuel	
	Production Daily	Runs to Stills Daily	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End
1946:									
January 5	4,548	4,651	218,193	14,488	98,494	5,293	35,199	8,867	42,371
January 26	4,626	4,553	220,544	13,622	101,737	5,720	29,498	8,411	39,722
February 23	4,714	4,595	226,699	13,175	104,709	5,728	25,398	7,913	39,290
March 30	4,425	4,684	224,994	13,896	104,715	5,337	28,240	8,738	37,746
April 27	4,672	4,685	224,443	14,228	99,631	5,568	30,466	9,204	39,404
May 25	4,759	4,857	222,214	14,312	95,769	5,463	32,973	8,908	43,368
June 29	4,957	4,854	223,883	14,500	92,333	5,325	37,762	8,828	46,447
July 27	4,926	4,896	223,756	14,535	88,626	5,817	44,316	8,217	49,517
August 31	4,833	4,911	227,132	15,014	87,217	5,630	53,134	8,539	53,173
September 28	4,778	4,829	223,043	14,675	85,324	5,632	59,827	8,172	57,657
October 26	4,730	4,758	221,184	14,863	86,423	5,710	65,499	7,728	60,872
November 30	4,795	4,707	227,613	15,145	88,371	5,258	66,062	7,672	58,647
December 7	4,695	4,720	225,419	14,845	88,183	5,870	63,861	7,847	57,209
December 14	4,717	4,685	226,966	15,160	88,678	5,802	62,147	7,976	56,096
December 21	4,708	4,820	226,111	15,195	89,554	5,789	60,608	8,419	54,217
December 28	4,713	4,968	225,995	15,604	93,126	5,931	58,941	8,181	53,427
Jan. 4, 1947	4,649	4,917	.....	15,281	94,964	5,857	58,034	8,375	53,285
Jan. 5, 1946	4,548	4,615	[5]218,918	14,039	99,393	5,385	34,998	9,068	41,659
Change:									
In Week	—64	—51	—116	—323	+1,838	—74	—907	+194	—142
In Year	+101	+302	+7,077	+1,242	—4,429	+472	+23,036	—693	+11,626
In Year	+2.2%	+6.5%	+3.2%	+8.8%	—4.5%	+8.8%	+65.8%	—7.6%	+27.9%

[1] All time peak. [2] Lowest between January, 1922 and July 1, 1944. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent states. [4] Lowest since December, 1921. [5] Stocks, December 29, 1945.

Changes in Prices Posted on Products in Several Areas

Price changes of some petroleum products were posted last week in the Midwest and New England sectors while postings in other parts of the nation remained unchanged with demand for most products steady.

Standard Oil Company of Indiana posted increases of .2 cent to .3 cent, effective January 7, in its tank wagon prices for gasoline, kerosine, distillate fuels and technical naphthas. The price boost affected all areas within Standard of Indiana's marketing territory except Southern Michigan where the posting were unchanged. Prices were advanced .3 cent at Chicago, Decatur, Joliet, Indianapolis, Green Bay, Milwaukee and Duluth, and hiked .2 cent at other points.

Socony-Vacuum Company announced reductions of from .5 to 2 cents per gallon in its posted price for aircraft gasoline at several New York state and New England points. Socony also made known initial postings for New York City, effective December 2. For Manhattan, Bronx, Kings and Queens, Grade 91 was listed at 14.6 cents tank wagon, Grade 100 at 16.1 cents tank wagon. Richmond tank wagon prices are 14.2 cents and 15.7 cents for the two grades respectively.

In Western Pennsylvania, refiners indicated that prices for finished products probably would be affected by the recent 10-cent advance in prices for Penn-grade crude.

Heavy demand for all products was reported in Central Michigan while the supplier on the Atlantic Coast has withdrawn his recent posting of lower prices.

Tightest products on the Gulf Coast were kerosine and heavy fuels while Mid-Continent points reported that truck transportation was better as more roads were open following the heavy freeze.

Pacific AIME to Meet

The Pacific Petroleum Chapter of the AIME will meet at the El Tejon Hotel in Bakersfield, Calif., January 23 to hear speakers on the Coles Levee and Paloma gas injection projects. The group will visit the fields and plants the next day as guests of the operating companies. This affair will be the first of several such field trips planned for 1947.

☆ California

North El Segundo Area to Be Extensively Prospected

North El Segundo area of Los Angeles County to be thoroughly prospected; company plans 14 wells in West Newport field; 15-well program scheduled for Arroyo Grande field; Phacoides proved productive in northern part of Cymric field; good well completed in old Kern Front field.

Los Angeles County: Six major companies, which made a minor oil discovery in the North El Segundo area near the Los Angeles airport last summer, have decided to explore the area thoroughly despite the unimpressiveness of the first well and the failure of a second. Standard Oil Company of California, acting as operator, plans to drill 3 more wells on Six Companies fee property and location has been staked for No. 3 in 2-3s-15w. The discovery well, brought in last August, is a small pumper of 14-gravity oil which is being produced from fractured schist at about 6855 feet. The schist is also productive in the El Segundo field about 1 mile away.

Orange County: Macco Corporation plans to drill 14 more wells in the West Newport field. Contract has been let to Fowler Drilling Company. This independent company is the most successful in the field, efforts of major operators to develop production in the area having met with indifferent success.

Almeria Industries Company, headed by Frank W. Hodgson of Long Beach, is rigging up to drill a wildcat in 20-6s-8w, near the town of Irvine. Amerada Petroleum Corporation has staked Anaheim Sugar 63-7, wildcat in 7-6s-10w. This location is west of the West Newport field and is considered semi-proven.

San Luis Obispo County: The Adams Oil Company is preparing to get under way with a 15-well drilling program in the old Arroyo Grande field. The operator expects to recover heavy-gravity oil at approximately 1500 feet.

Kern County: Belridge Oil Company is reported to be bringing its 62-W-33 deep test in the South Belridge field on production from the Point of Rocks equivalent as soon as a casing leak is repaired. This will be a new deep sand discovery if the well is succesfully completed. The company will make no statement about the well, but tests of the interval 13,945-75 feet are reported to have been very encouraging.

Pacific Western Oil Corporation has recovered a few hundred feet more of drill pipe from its world's record well, National Royalties 1 in 5-26s-22e. Last week the pipe was recovered to 12,179 feet. Plan of the contractor, Loffland Bros. Company, was to continue to wash over and cut until all the pipe has been recovered. Total depth is 16,668 feet.

Honolulu Oil Corporation has brought in the first producer from the Phacoides formation in the northern part of the Cymric field, although this sand is productive elsewhere in the area. The company's Midway-Premier 22-255 in 22-29s-21e flowed 34-gravity oil on a formation test at the rate of 1000 barrels per day. Tests for production in the Oceanic zone below were unsuccessful. Deep sand development in this field has been one of the features of the past year in Kern County and indications are that drilling will continue at its present rate for some time to come.

Richfield Oil Corporation's wildcat, Buck 1 in 6-27s-21e, southwest side of the Lost Hills field, is apparently a failure. Drilling has been suspended at 3005 feet.

Standard of California completed a good well in the Kern Front field when Well 11-9 in 27-28s-27e was placed on the pump for 330 barrels of 13-gravity oil and about 65 barrels of water. Total depth is 2500 feet. Considering the age of the field and the location of the well this is regarded as an exceptionally good producer.

Kings County: Developments in Standard of California's Kettleman Hills Middle Dome wildcat, 73-30V in 30-23s-19e, were lacking due to a fishing job. Drill pipe is stuck 13 feet off bottom Total depth is 12,370 feet. Good oil and gas showings have been observed on the ditch, according to recent reports.

Louisiana Allowable Up

January oil allowable in Louisiana was set at 446,426 barrels daily, an increase of 2015 barrels daily over December, and a gain of 37,212 barrels daily over a year ago. South Louisiana production was set at 344,607 barrels, and the limit for North Louisiana fields was fixed at 101,819 barrels.

☆ Oklahoma

Luther Area Wildcats Staked; Edmond Production Extended

Two wildcats staked in Luther sector; new Mississippi lime pool looms in Osage County; Edmond field production extended west; Asher sector producing from multiple zones; oil pool may be opened near Micawber area; Cotton County wildcat looms as pool opener.

Oklahoma County: A second wildcat test to the Wilcox sand will start south of Luther townsite when weather permits. It is Double-R Drilling Company's Huntington (Wagner) 1, NE SW 2-13n-1e, 3 miles northeast of the Jones field. The area already has 1 new wildcat start, R. C. Holt's Rinehart 1, SW SW NW 34-14n-1e, 1½ miles from the Huntington. Both of the blocks were assembled by O. M. Cole and Eli D. Bernstein. The Holt well is on a surface high, and the Double-R well is on a seismograph high. Nearest production is in the Northeast Jones field, where pay is from the Cleveland sand, and the Northwest Arcadia field, which produces from the Wilcox.

Osage County: A. G. Oliphant, Tulsa independent, may open an oil pool in the northeastern part of the county. Osage 1, SW SW NE 1-25n-4e, 3 miles south of the old Olson pool, had a good

Wells Completed in United States in Week Ended January 4, 1947

Data preliminary and subject to revision. Revised and more complete data on all completions and exploration shown in monthly summaries published in last issue of each month.

State or District	FIELD COMPLETIONS: New Wells: Oil	Dist.	Gas	*Input	Dry	Total	Old Wells Deepened	EXPLORATORY COMPLETIONS: Oil	Dist.	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	This Week 1946
Alabama	...	...	...	...	...	...	...	...	...	...	1	1	1	...	...
Arkansas	1	...	...	...	1	2	...	1	1	...	5	7	9	...	8
California	13	...	2	...	5	20	3	...	...	...	10	10	33	39	46
Colorado	4	...	...	...	1	5	...	...	...	...	...	...	5	4	3
Florida	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Illinois	21	...	...	...	16	37	...	...	...	...	...	...	37	58	30
Indiana	16	...	1	...	7	24	...	1	...	...	4	5	29	11	7
Kansas	20	...	5	...	15	40	...	...	...	...	5	5	45	53	45
Kentucky	8	...	...	...	5	13	...	...	...	...	2	2	15	7	6
Louisiana	4	...	2	...	6	12	...	3	1	...	3	7	19	34	43
N. Louisiana	3	...	2	...	2	7	...	...	...	...	2	2	9	25	21
S. Louisiana	1	...	...	...	4	5	...	3	1	...	1	5	10	9	22
Michigan	...	...	4	...	5	9	...	2	...	...	6	8	17	10	11
Mississippi	2	...	...	...	1	3	...	2	...	...	6	8	11	7	2
Montana	1	...	...	...	...	1	...	...	...	...	...	...	1	2	19
New Mexico	11	...	...	...	...	11	2	...	...	...	...	...	13	1	9
New York	15	...	...	10	1	26	...	...	...	...	...	...	26	25	25
Ohio	11	...	4	...	8	23	1	...	...	1	...	1	25	24	20
Oklahoma	25	...	3	...	15	43	...	1	...	...	27	28	71	62	31
Pennsylvania	27	...	3	15	1	46	2	...	...	...	...	...	48	42	49
Texas	91	1	9	...	21	122	4	5	...	1	19	25	151	112	204
E. Tex. Bor. Co.'s	3	...	3	...	...	6	...	...	...	...	1	1	7	...	11
Rest of E. Tex.	10	...	...	...	1	11	...	...	...	...	...	...	11	3	8
North Texas	22	...	...	...	7	29	1	...	...	...	5	5	35	19	32
W. Central Tex.	10	...	...	...	5	15	1	1	...	...	7	8	24	6	22
West Texas	20	...	...	...	3	23	...	1	...	...	...	1	24	42	44
Texas Panhandle	5	...	6	...	1	12	2	...	...	...	...	...	14	8	18
G. Coast, Upper.	3	1	...	...	1	5	...	1	...	...	...	1	6	6	24
G. Coast, Lower.	13	...	...	...	1	14	...	2	...	1	3	6	20	18	33
Southwest Texas	4	...	...	...	2	6	...	...	...	...	2	2	8	6	11
S. Central Tex.	1	...	...	...	...	1	...	...	...	...	1	1	2	4	1
West Virginia	3	...	12	...	2	17	...	...	...	...	...	...	17	18	13
Wyoming	1	...	...	...	...	1	...	...	...	...	...	...	1	6	3
Total U.S.	274	1	45	25	110	455	12	15	2	2	88	107	574	516	575

* Includes salt water disposal wells.

show of oil and gas from 3307-345 feet in the Mississippi chat. Seven-inch casing has been set at 3304 feet. Nearest production owned by Oliphant is in the Drum Creek pool in 21-25n-4e. Wells produce from the Cleveland sand averaging 165 barrels of oil daily.

Edmond Area: J. J. Fleet apparently has extended Bartlesville sand production in the old Edmond pool ¾ mile west with Patten 1, SE SE NE 26-14n-4w. With Bartlesville topped at 6404 feet and casing set on top, the well was shot with 80 quarts of nitroglycerine. It is showing for an estimated 200 barrels of oil per day from 6404-50 feet. The test was taken deeper, topping the Hunton lime at 6555 feet and the Sylvan at 6610 feet. Testing continues in the Bartlesville zone.

Pottawatomie County: Development of the West Asher area in Township 6n-2e has proved multiple zone production of both oil and gas. The field is producing from the Lawton sand zone, Hoover sand, and the Layton sand (all Pennsylvanian formations) and the Viola lime. The Oklahoma Corporation Commission recently approved 20-acre spacing for oil wells from the Lawton sand in 27-6n-3e on application of T. N. Berry, pioneer operator in the area. Phillips Petroleum Company will file application for 160-acre spacing for gas wells in the Layton sand covering the same areas. Skelly Oil Company already has applied for permit for 20-acre spacing in the Viola lime in portions of Sects. 21, 22, 27 and 28-6n-3e. Original production in the field is from the Hoover sand, discovered at T. N. Berry's Vestal 1, SE SE NE 28-6n-3e, which made 278 barrels of oil a day from 1816-35 feet. Berry later opened Layton sand production with Walton 1, SW SE NW 27-6n-3e, this well flowing 77 barrels daily from 2855-68 feet. Berry's Vestal 2, SW SE NE Sect. 28, was completed in the Layton at 2807-19 feet for 27,220 cubic feet of gas daily. Kerlyn Oil Company and Phillips Petroleum Company opened Viola lime production in April, 1945. One well, completed by Skelly, did 278 barrels daily from the Viola lime at 4000 feet.

Micawber Area: An oil pool apparently will be opened southwest of the Micawber area in North Central Okfuskee County by Bay Petroleum Corporation's Follansbee 1, SW SE SW 16-13n-8e. On a drill-stem test in the Dutcher sand at 3565-75 feet, a good show of oil and gas was recovered, and 500 feet of oil recovered in the tester. The well is between the Boley and Valley Grove fields.

Cotton County: The fast Cotton County play appears to be quieting down a bit, but operators are still in the process of testing a number of wildcats. Appearing to be a pool opener is H. A. Taylor et al's Taylor 1, SW SE SW 34-3s-11w, 1½ miles northwest of the Cache Creek field. The Pennsylvanian sand pay was topped at 1445 feet, and on a drill-stem test from top to 1448 feet, 250 feet of clean oil was recovered. More of the pay sand may be drilled before the well is completed.

Caddo County: Oklahoma's deepest test well is idle while operators move in to run possibly the world's longest string of 7-inch casing. The test, which is The Superior Oil Company's Weller 51-11, NW NW NE 11-8n-12w, near Fort Cobb, had reached 16,351 feet when the hole began to cave, threatening to halt efforts to vie for a depth record.

Edward Smith, manager of the company for Oklahoma, said the long string would be run to the bottom of the hole and cemented. While setting, electrical log will be run, and the crew will then resume drilling.

☆ Kansas

Discovery in Ellis County Makes 400 Barrels Daily

Stanolind strike in Ellis County making 400 barrels daily; wildcat staked near Boggs area of Barber County; Bridgeport tests prospective pool opener in Barton County; testing continues at McPherson County wildcat; gasser completed in Ryan Southeast oil pool.

Ellis County: Stanolind Oil & Gas Company's new pool opener, Irvin 1, SE SE SE 6-14s-19w, is making approximately 400 barrels of oil a day. Pay is from the Arbuckle lime through perforations at 3852-74 feet. The discovery is 2 miles east of the Pleasant pool, and 7 miles west of Hays Townsite.

Barber County: J. M. Huber Corporation and W. J. Coppinger have started operations at a wildcat 4½ miles south of the new Boggs South pool. It is the Cook 1, CWL SW NW 8-34s-12w, and is on a 2440-acre block. Discovery of the Boggs South pool was made by Continental Oil Company.

Barton County: The Bridgeport Oil Company has started testing Schneider 1, NE NE NE 31-17s-14w, wildcat 1½ miles northwest of production in the Boyd pool. Good shows of oil were recorded in the Arbuckle lime, topped at 3403 feet, with the best logged from 3406-14 feet, total depth, where crew is now testing.

McPherson County: Crew is still testing W. C. McBride, Inc.'s Waln 1, wildcat in NE NE SE 12-19s-1w, on the McPherson-Marion County line, in an effort to bring the well into production. Oil and gas shows were logged in the Mississippi chat, topped at 2832 feet. Testing is at a plugged-back depth of 2850 feet.

Pawnee County: A 5 million-cubic-foot gas well has been completed in the Ryan Southeast oil pool by Campbell & Kuhn et al. Wickstrom 1, NE NE SE 11-20s-16w, was completed as a gasser from perforations in the Arbuckle lime from 3724-34 feet. Top of the formation was 3697 feet, with total depth 3758 feet.

Carter Plans Building

The Carter Oil Company will erect in Tulsa a $225,000 two-story laboratory building to house expanded research laboratory and shop facilities. The addition will more than double the space of the present research center, which is on a 10½-acre tract north of the city.

Gasoline Tax Expires

The 2-cent gasoline tax, levied by the Oklahoma State Legislature in 1945, automatically expired January 1, thus making the state's total tax per gallon on the fuel 5.5 cents. During the 20½ months the tax was levied, an estimated $7½ million was brought into the state treasury for road building purposes. This sum was equally divided for state highways and farm-to-market roads.

☆ New Mexico

Lea County Wildcat Sets Pipe To Test San Andres Broken Pay

Northeastern Lea County wildcat sets pipe to test broken pay in the San Andres; high granite checks Brunson field's northeast expansion; dual completions may be authorized for multi-pay fields in Lea County.

Lea County: Devonian Oil Company's Browne-Federal 1, near C NW NW 19-9s-38e, isolated wildcat in the northeast corner of the county, logged broken oil saturation and porosity at 4945-5012 feet in San Andres, topped at 4230 feet with elevation of 3969 feet. Pipe has been cemented to try for completion. This prospect correlates 3 feet high to The Ohio Oil Company's State-McCormick 1, 2 miles south by west, and the latter almost made a commercial pumper from the San Andres before deepening to the Glorietta at 5658 feet.

Stanolind Oil & Gas Company's Owens 1, C SW NW 3-22s-37e, deepened from 3725 feet, defined Ellenburger production on the northeast edge of the Brunson field in reaching granite at 7330 feet, and will complete from the 6500-foot Yeso, or Drinkard. The Ellenburger was absent due to the granite being the highest in the area. Amerada Petroleum Corporation's Corrigan 6, north outpost for the Brunson field and capable of oil flow from the Simpson sand, was drilling dry lime at 7673 feet, with the Ellenburger due at this level.

Gulf Oil Corporation was scheduled to make formal application before the New Mexico Oil Conservation Commission at Santa Fe late last week to dual complete oil wells in the Drinkard, Brunson, Paddock, Jones and Hobbs fields, Lea County. More than 100 wells may be subject to dual completions in these areas, especially in the Hobbs field, where the upper pay, which is locally known as the Bowers sand, is attracting attention through plugback operations and the drilling of new wells.

Hobbs Field: Sun Oil Company's McKinley 1-B, which has been showing for a small pumper from the Wolfcamp, Basal Permian, after nitro shot and acid treatment of open hole at 7542-7658 feet, will be deepened.

San Juan County: Byrd & Frost, Inc., P. B. English and Stanolind's Hargrove-Federal 1, C NW NW 4-27n-10w, prospective gas-distillate discovery from the Dakota at 6470-92 feet, is scheduled to drill plugs from 7-inch pipe and make production test this week. Drill-stem test was not run after cored formation samples appeared promising. This deep test entered the Mesa Verde, which showed possible production, at 2620 feet, with elevation of 6149 feet, correlating about 100 feet high to a nearby 5745-foot junked test on the same geological strike.

Union County: The Pure Oil Company landed surface pipe at Wiggins Unit 1, NE NE SE 13-31n-36e, Ordovician prospect on a large block of supporting acreage assembled after extensive geophysical work in the area.

Roosevelt County: Continental Oil Company and Cooperative Refinery Association's Alston Unit 1, C SE SE 20-7s-35e, 35 miles northwest of production, plugged back from barren Yeso at 5225 feet to 4290 feet, where production test was under way after using acid in the San Andres.

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Crockett County Ordovician Test Has Gas-Distillate Flow

Prolific gas-distillate flow encountered by second Ordovician test on Crockett County geophysical high: Levelland field extension proves score of new locations for San Andres production; new middle Permian pay in sight for southwest sector of Keystone structure; Wheeler field's Devonian pay extended a mile east.

Crockett County: Stanolind Oil & Gas Company's University 1-TT, C SW NW Sect. 12, Block 39, ½ mile north of its shut-in probable discovery from the Ellenburger, confirmed the presence of gas-distillate flow from Ellenburger, and was coring dry chert at 8075 feet. A drill-stem test at 8013-65 feet produced gas to the surface within 2 minutes for a calculated rate of 6,640,000 cubic feet daily, and 10 barrels of distillate hourly. Stanolind's University 1-GG, original test for the geophysical high, made a similar gas-distillate flow through tester at 7977-8005 feet, and made an unsuccessful attempt to complete as an oil producer from open hole at 8298-8284 feet. Operations were suspended prior to the last lease auction in the area without perforating opposite the most effective pay in the Ellenburger, topped at 7975 feet.

Shell Oil Company's University 1, 1½ miles southwest of the shutin test, tested a nominal show of gas at 6336-6669 feet, and was drilling shale at 6940 feet.

Hockley County: Stanolind's Ripley 1, NWc Labor 20, League 72, Val Verde County School Lands, extended the Levelland field 1½ miles southeast in swabbing and flowing 103 barrels of oil and 26 barrels of acid water initial after acidizing open hole at 4778-4836 feet in San Andres, topped at 3790 feet with elevation of 3535 feet. It proves a minimum of 20 wells.

Hale County: Stanolind's Fisher 1, C SW SW E.L. & RR Co. 5, Block CL, prospective Pennsylvanian oil discovery and northeast outpost for the Permian Basin, delayed running pipe to try for additional pay in deepening. A drill-stem test at 6946-72 feet yielded gas to surface within 1 hour, while the recovery consisted of 20 feet of dark oil and 200 feet of heavily oil- and gas-cut mud. A later test at 6968-92 yielded 80 feet of oil and 540 feet of heavily oil- and gas-cut mud, and the test was coring below 7000 feet. Fisher 1 has logged about 100 feet of broken oil pay, and the outlook is bright for a commercial producer. It is 19 miles east by north of production. Nearby short-term leases probably will cause considerable development in the area.

Winkler County: Santa Fe Petroleum Corporation's Wheeler-Magnolia 1, C NW NW PSL 21, Block B-6, was using tester at 9740 feet in Devonian, topped at 9620 feet, with elevation 2950 feet. A drill-stem test of nominal oil showings at 9683 feet proved dry. The Permian-Pennsylvanian contact was called at 8090 feet and top of Mississippi at 8595 feet. It is contracted to drill to 10,500 feet.

Sunray Oil Corporation's Sealy-Smith-Stanolind 1, C SE SE G&MMB&A 31, Block A, resumed drilling after testing dry in the Devonian at 10,615-53 feet. The Mississippian was entered at 9650 feet, with elevation of 2841 feet.

Standard Oil Company of Texas' Baird 26-13, SW PSL 13, Block B-3, 2½ miles southwest of Holt oil production in the Keystone area and isolated from this pay by an intermediate 5029-foot failure, gives promise of opening a new middle Permian pay area within the Colby sand district. A drill-stem test of Basal San Andres at 4824-4970 feet tested gas with a trace of distillate at the rate of 1 million cubic feet daily. The Holt, or Glorietta was entered at 4866 feet, with elevation of 2912 feet, averaging 100 feet below the pay in the multi-pay sector of the field. A drill-stem test of the Holt at 5177-5420 feet yielded 430 feet of gas-cut mud and 440 feet of oil- and gas-cut mud. The entire section will be explored before running pipe to try for completion. This well was originally completed in the Colby sand at 3265 feet.

Ector County: Lion Oil Company's TXL 1, C NW NW T&P Ry. 17, and 1 mile east of the most southerly producer in the Wheeler multi-pay field, apparently confirmed production from the Devonian, although structurally low, when a drill-stem test at 8555-8640 feet yielded 450 feet of heavily gas-cut mud. At this level it is below the producing depth of the field's 15 Devonian wells.

The Texas Company's Thomas 11, C SE NW T&P Ry. 6, northwest edge of the main sector of the TXL field, flowed 264 barrels of oil and water-load on 2-hour preliminary test through 2-inch from Ellenburger open hole at 9744-9834 feet with elevation 3344 feet. The Ellenburger pay attains its greatest east-west width in this sector, but may not extend more than 2 locations farther west. The Texas Company's Thomas 12, C SW SW T&P Ry. 6, and ¼ mile east of Devonian, drilled Devonian pay to 8063 feet, with elevation 3348 feet, and set pipe at 8062 feet to complete through perforations. This outpost will be the most northwesterly Devonian producer, and the outlook is good for important northwest Devonian extensions, possibly bypassing a deep failure on the west.

Rowan Drilling Company's Parker 2, south end of the TXL field and 2 miles south of nearest Ellenburger production, confirmed its earlier flowing ability in registering natural potential of 2154 barrels of 44.8-gravity oil, with gas-oil ratio 852/1, through ½-inch choke from open hole at 9650-9719 feet. The Ellenburger was topped at 9625 feet, with elevation 3260 feet. Considerable development is planned along a southeast strike from this well.

Gulf Oil Corporation's Goldsmith 421-E, near the apex of the Permian producing structure of the Goldsmith field, was drilling lime at 8008 feet. The Permian beds are thicker in this sector than the north edge of the structure, which has been given an Ellenburger test that plugged back and opened an important Clear Fork producing area. Gulf and E. E. Fogelson's University 1-A, Jordan field, was drilling lime at 8068 feet, having entered the Silurian at 7740 feet, or about flat with a deep failure 4½ miles north by west.

Crane County: Gulf's University 1-HH, 3¾ miles north by east of nearest Devonian production in the Block 31 field, was drilling lime and chert at 8697 feet in Devonian, topped at 8385 feet, or 31 feet high. A promising show of oil and gas was logged at 8427-78 feet, while most effective pay is due from lower section of the Devonian.

☆ West Central Texas

Callahan Strike Requires Oil String to Exclude Cavings

Ellenburger discovery in Callahan County will require new oil string to exclude cavings and high-gas oil ratio; Fisher County semi-wildcat makes steady flow; deep prospect in Shackelford County has shallow sand.

Callahan County: E. E. Fogelson and M. S. Ingleright's Baum-Swafford 1, Ellenburger discovery on the apex of the shallow Baum pool, will set liner or full length oil string due to excessive gas-oil ratio and cavings from above the Ellenburger, topped at 3840 feet. This new-pay discovery is rated at 250 barrels of 44-gravity oil and above 5 million cubic feet of gas daily, based on brief tests since drilling plugs from 5½-inch pipe at 3828 feet to 3860 feet, total depth. Pipe was due to be set on top of the Ellenburger, but hung at the above level, permitting Barnett shale cavings to partially fill the 32 feet of open hole. The Ellenburger in this area is unusual in that a gas-cap prevails at 3840-52 feet.

Fogelson, Ingleright and Dean Bros.' Brigham Young 1, Block 93, Comal County School Lands and 3 miles east by south of the Baum strike, resumed drilling after being delayed by frozen water lines at 2950 feet. It is checking high to nearby semi-shallow failures.

Fisher County: Ellis A. Hall et al's Terrell 1-A, C NW SW H&TC 80, Block 1, semi-wildcat, flowed 32 barrels of oil on 23-hour natural test through ¼-inch choke from Strawn open hole at 4885-4902 feet, having plugged back from water at 4942 feet. Hall et al's Terrell 2-A, 9/16 mile northwest, showed oil and water on test at 4970-5050 feet, and abandoned.

Shackelford County: Humble Oil & Refining Company's Green 1-C, SEC T&P Ry. 55, Block 11, Ellenburger prospect, recovered 140 feet of oil- and gas-cut mud when tester was used in sand at 955-59 feet, and was drilling at 2260 feet.

Fogelson and Ingleright's Lones 1, C SE NW T&P Ry. 64, Block 11, Ellenburger test for shallow gas area, was fishing for tools at 2490 feet, having logged 100 feet of broken oil stained lime, but sub-normal in porosity in the Canyon.

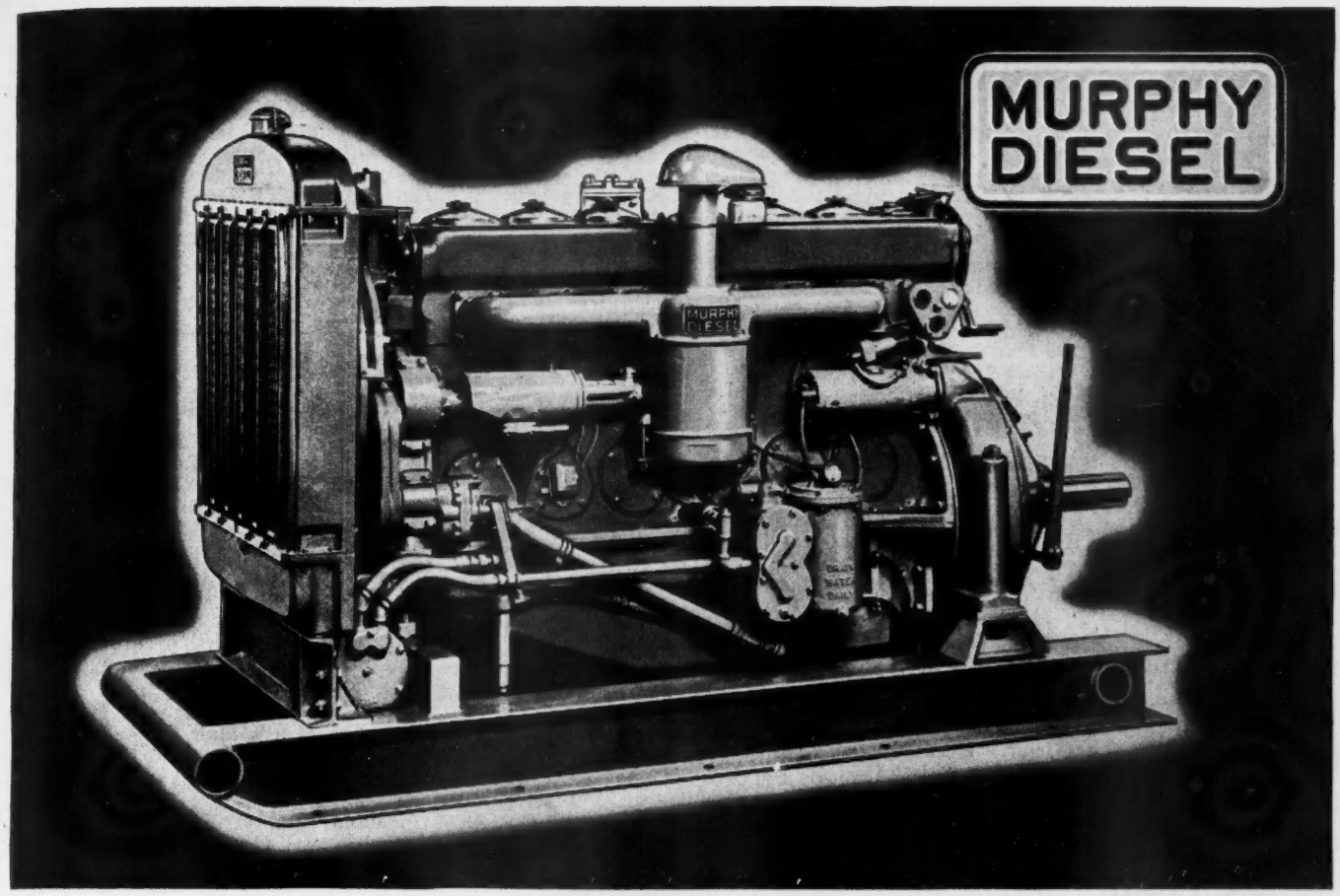
Stephens County: Fred M. Manning, Inc.'s Ward-Gulf 1-C, north edge of the Breckenridge field, was abandoned at 3215 feet in Bend, topped at 3155 feet.

☆ North Texas

Collin County Wildcat Logs Additional Strawn Shows

Collin County wildcat logs additional shows in Strawn; second producer due in new Wilbarger County area; deep prospect in Montague County has show of gas.

Collin County: Standard Oil Company of Texas' Newsome 1, John W. Cox Survey, Frisco area, recovered 7 feet of tight sand, probably Strawn, in core at 6671-78 feet, and was making a drill-stem test. This wildcat, situated on a 15,000-acre block, passed up several nominal shows of gas.



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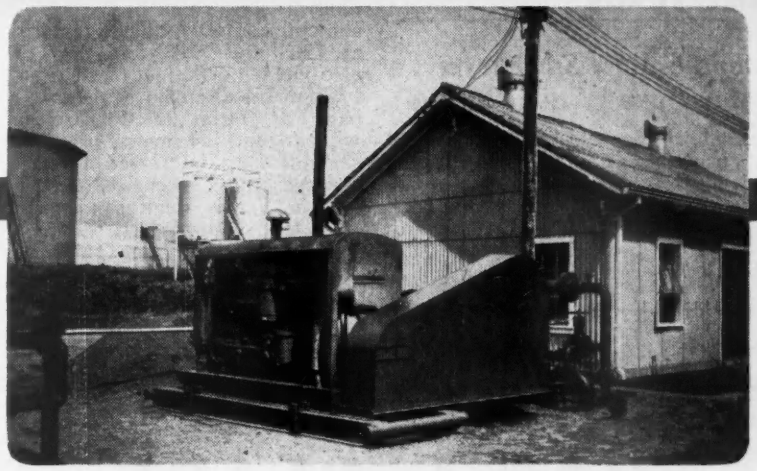

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Wilbarger County: The Texas Company's Robertson 1, SW SW SE H&TC 25, Block 16, and north offset to the Tolbert pool discovery at 5015-40 feet, entered the Palo Pinto lime at 5027 feet, or 6 feet low, and recovered 1200 feet of gas and 60 feet of oil-cut mud when tester was used at 5052 feet. It was drilling at 5069 feet. Amerada Petroleum Corporation's Inglish 1, west offset to the discovery, was drilling at 4355 feet.

Paradise Oil Company's Waggoner 2-1, west offset to its flowing discovery at 3147-55 feet in Canyon, failed to indicate commercial production in this zone, and was drilling below 3300 feet.

The Texas Company's Hauser 1, Wm. Alston Survey and 2 miles southeast of Alston, was idle at 6691 feet without shows.

Montague County: Continental Oil Company and Magnolia Petroleum Company's Tompkins 1, Labor 5, Calhoun County School League 12, a mile northwest of Dyemound, was making a drillstem test at 6914 feet. A previous test at 6895-6904 feet yielded 25 feet of gas-cut mud.

Clay County: Jack Grace et al's Edwards 2-B, offsetting the 2 prolific Bend conglomerate producers in the east Henrietta field, set pipe at 6386 feet to test open hole to 6412 feet in Ellenburger, topped at 6370 feet. The Bend was entered at 5895 feet, correlating flat with the discovery, and oil saturation was logged at 6140-53 feet.

☆ East Texas

Freestone County Smackover Test May Have Water Table

Smackover prospect in Freestone County probably has reached water table; deep test in Quitman field logs additional shows in Rodessa series; Houston County wildcat to continue to Edwards after nominal gas-distillate show above water in Woodbine.

Freestone County: The Texas Company's White 1, west outpost for the Fairfield multi-pay gas-distillate field, was reaming core hole at 13,325 feet in hard oolitic lime. A strong sulphur odor at this level was interpreted as possible water bearing lime. The company had obtained permit to deepen to 15,000 feet if necessary to determine the producing, or water level in the Smackover.

Wood County: Shell Oil Company's Goldsmith 12, first deep test for the Goldsmith field, was drilling sand with streaks of shale at 8525 feet after encountering additional shows in the Rodessa. A drill-stem test at 8341-8417 feet yielded 90 feet of gas-cut mud, while the last test at 8476-8500 feet returned 45 feet of nominally gas-cut mud. Pipe was set at 7924 feet to protect probable gas-distillate production in the top of the Rodessa.

Amerada Petroleum Corporation et al's Coke Unit 2, Coke field, was idle for orders at 9644 feet in Travis Peak, topped at 8345 feet, due to the hole being 11 degrees off vertical. Tilted formations within the last 350 feet caused the crooked hole. In the Hawkins area, Humble Oil & Refining Company's McKnight 1 was drilling hard sand with streaks of shale at 10,575 feet in Travis Peak.

Houston County: Standard Oil Company of Kansas' Lundy-Hrmble 1, B. P. Duncan Survey and 11 miles west of Crockett, was drilling at 7300 feet on an 8000-foot depth contract after developing substantial gas-distillate showings in the Woodbine, topped at 7166 feet with elevation of 259 feet. Another test is likely to be drilled in the area as small showings appeared when tester was used at 7208 and 7228 feet, but the latter also yielded 5780 feet of clear salt water.

Cherokee County: Standard Oil Company of Texas' New Birmingham 1, wildcat that has several promising zones scheduled to be tested through perforations, was deepened 2 feet to 10,017 feet in Travis Peak sand to run drill-stem test of the 5 feet of open hole. No test was made of the Travis Peak prior to setting pipe.

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Wildcats: Humble's Benge 1, Henderson County, was abandoned in Paluxy at 6642 feet. In Rusk County, Tide Water Associated Oil Company-Seaboard Oil Company's Bird 1, Jas. McClain Survey, was drilling shale and lime at 6510 feet in the Rodessa, with probable water in the upper section. Gregg-Tex Gasoline Corporation's Baker 1, Limestone County Travis Peak test, was drilling shale and lime at 4410 feet.

☆ East Texas Border

Shelby County Wildcat Sets Casing for Production Test

Shelby County wildcat completes fishing job and sets casing for production test; Lasseter area wildcat below 8600 feet; 2 more tests slated for Waskom flank flush area.

Shelby County: B. F. Phillips' Pickering Lumber Company 1, Russell Survey, 3 miles north of Shelbyville, wildcat, cemented casing set after a fishing job, with testing scheduled soon of a Lower Pettit oil show in oolitic lime cored at 6493-6510 feet.

Marion County: Magnolia Petroleum Company et al's Hall Estate 1, M. W. Moody Survey, 5 miles northwest of the Lasseter area, was making hole in red shale at 8627 feet.

Panola County: C. Andrade, M. G. Hansbro and Hunt Oil Company have staked Lucy Dandy 1, Bethany area, Sanderson Survey, as a 6300-foot test.

Harrison County: E. C. Johnston has applied for permit to drill 2 tests in the Simpson Holloway Survey, 16 miles east of Marshall, on the Hannah McLeflin lease and on the G. E. Cargill lease, in the flush oil sector on the west flank of the Waskom-Jonesville gas-distillate field.

☆ Southwest Texas

Kelsey Field Well Is Dually Completed in Two New Pays

Two new pay zones completed at Kelsey; casing set in wildcat southeast of Cole field; wildcat in Agua Prieta area test gas.

Starr County: J. O. Clark's M. G. de Juarez 1, southwest end of Kelsey field production, has been dually completed in 2 new pay zones. From perforations at 5871-76 feet the well flowed 124 barrels of 42-gravity oil daily through 9/64-inch choke with 700 pounds working pressure and gas-oil ratio 680/1. From the other set of perforations at 5369-72 feet the well flowed 144 barrels of 51-gravity oil on 9/64-inch choke through casing, with working pressure 875 pounds and gas-oil ratio 1185/1. Total depth is 7272 feet.

Duval County: Tom Graham et al's Benavides 1, wildcat 2 miles northeast of Ohern field and 1½ miles southeast of Cole field, has 5½-inch casing set to total depth of 3333 feet for completion. A drill-stem test at 3320-33 feet flowed gas with 475 pounds working pressure through ⅜-inch choke, tool open 8 minutes. Bottom hole pressure flowing was 900 pounds. This test is in Mariano Arispe Grant 75.

Taylor Refining Company's Parr 1-G, wildcat 1½ miles northeast of Agua

Prieta field, flowed gas and salt water with a trace of oil from perforations at 9201-14 feet. Flow was through 5/64-inch choke with tubing pressure 2300 pounds. The hole was squeezed with plastic at 9203-07 feet prior to the latest test. Total depth is 11,250 pounds with 5-inch liner set to 9300 feet.

☆ South Central Texas

Atascosa County Wildcat Shows For Possible Discovery

Atascosa wildcat shows for possible discovery; Jourdanton field extension being completed as oiler; casing set in Edwards County wildcat.

Atascosa County: McFarland Drilling Company's Krisch Estate 1, wildcat 3 miles north of Poteet, may open a field. With casing perforated at 3542-3608 feet in the Austin chalk, hole was swabbed down after acidizing to 1100 feet and showed some oil and gas. Total depth is 4001 feet with 5½-inch casing set at 3607 feet. A drill-stem test at 2744-55 feet was dry. The drill-stem test at 3542-3608 feet recovered 630 feet of oil and 360 feet of mud. This test is in Jurgen Dierks Survey 1207.

Humble Oil & Refining Company's SPJSA Lodge 1, extension a mile west of Jourdanton field production, is being completed as an oil well. A drill-stem test at 7370-90 feet recovered 6870 feet of oil with 5 pounds working pressure in 20 minutes, using 1-inch choke at top. Total depth is 7390 feet with 5½-inch casing set to 7386 feet and completion will be from open hole at 7386-90 feet.

Edwards County: Casing is being set on top of the Ellenburger at Ray Pool's Peterson 1-A, wildcat 20 miles north of Rock Springs. The Ellenburger will then be acidized and if the test does not show for production, hole will be deepened to porosity, using completion rig. The Ellenburger was topped at 4425 feet and total depth is 4900 feet. This test is in the W¼N¼ of Sect. 44, M&E RR Survey.

☆ Lower Texas Coast

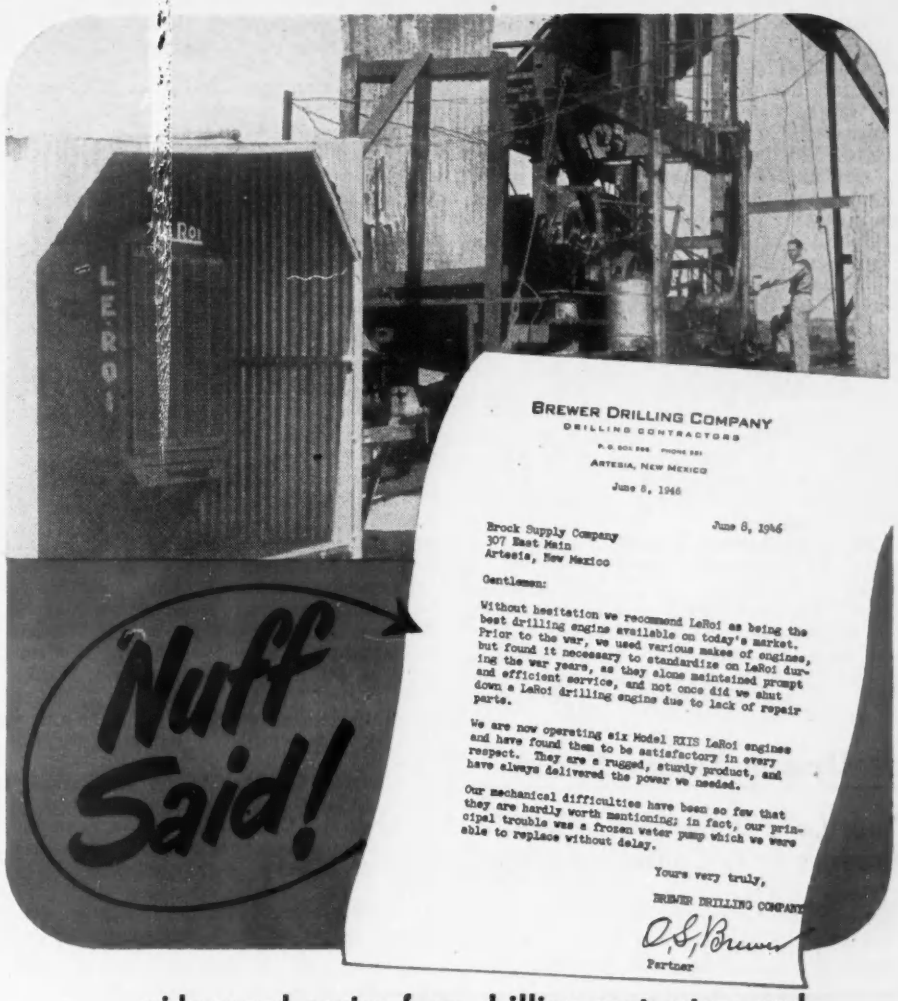
Jim Wells County Tijerina Canales Field Has New Pay

New pay zone discovered at Tijerina Canales; Bee County discovery tests on pump; good producer completed at Pita; Boyce field northwest extension test flows oil; gas well completed a mile north of La Rosa field.

Jim Wells County: A new pay zone discovery for Tijerina Canales field is The Texas Company's H. C. de Tijerina 38, in the northwest extension area. From perforations at 5990-6000 feet the well flowed 73 barrels of 51.9-gravity oil daily through 5/32-inch choke with tubing pressure 210 pounds, casing sealed, and gas-oil ratio 502/1. Total depth is 7472 feet with 5½-inch casing set to 7100 feet. This well is 1193 feet northwest of the Tijerina 37 that extended the field more than ½ mile northwest.

Bee County: Sam Donzis' Holzmark 1, wildcat discovery in the Holzmark area 10 miles northwest of Beeville, pumped 3 barrels of oil daily from perforations at 3486-3524 feet after acidizing with 100 gallons. Total depth is 3540 feet with 5½-inch casing set to 3530 feet.

Brooks County: Humble Oil & Re-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fining Company's Sullivan 6-B has been completed as a good oil producer at Pita field. The well is waiting on potential after flowing 241 barrels of oil daily, no water, through ⅛-inch choke. Total depth is 8396 feet with 5½-inch casing set to 8123 feet and perforated for completion at 7771-80 feet. This well is on the east flank of the field, 1866 feet southeast of previous production.

Goliad County: Sun Oil Company's Emil Els 1, outpost 4000 feet northwest of Magnolia Petroleum Company's Boyce 1 at Boyce field, flowed on initial test 4 barrels of oil hourly through ¼-inch choke during a 3-hour test, tubing pressure being 2577 pounds. Later the flow showed some salt water and perforations at 7629-44 feet in the Luling were squeezed to shut off the water and casing will be reperforated at the same level for completion. Total depth is 7701 feet with 5½-inch casing set on bottom for completion.

Refugio County: The Clymore Company, Inc.'s Zarsky 1, wildcat 1 mile north of La Rosa field, J. M. Aldrete Grant, has been completed as a gas well for an estimated 50 million cubic feet of gas daily on open flow. Total depth is 6750 feet with 5½-inch casing set to 6430 feet and perforated for completion at 4926-37 feet.

☆ Upper Texas Coast

Sour Lake Dome South Flank Production Is Confirmed

Sour Lake south flank production confirmed; second well completed in new North Port Neches field; wildcat north of South El Campo field discovers gas-distillate production; initial flow of Hamill's Liberty County discovery gauged.

Hardin County: The Texas Company has confirmed production on the south flank of Sour Lake dome. Fee 328, 660 feet north of the Fee 326 that discovered a new sand on the south flank, flowed on potential 190 barrels of 25.5-gravity oil daily through 10/64-inch choke with 600 pounds flowing pressure on tubing. Total depth is 5322 feet with 7-inch casing set to 5295 feet and perforated for completion at 5056-68 feet.

Orange County: Gulf Oil Corporation's C. K. Akers 1, confirmation test 726 feet southwest of Hinkle Drilling Company's Adcock 1 discovery at North Port Neches field, has been completed as an oil well. On potential the well flowed 125 barrels of 38.6-gravity oil daily through ⅛-inch choke with 2550 pounds flowing pressure on tubing and gas-oil ratio 5690/1. There was a 1.1 percent water cut in the flow. Total depth is 8834 feet with 5½-inch casing set to 8825 feet and perforated at 8776-78 feet. There are two other active tests in the new North Port Neches field. Gulf has spudded Akers 2 and Shell Oil Company is drilling N. N. Adcock 1. Hinkle has located the G. M. Adcock 2, operations to begin on this test as soon as the rig has completed working the discovery.

Wharton County: Floyd L. Karsten's W. P. Gann 1-A, wildcat 2 miles north of South El Campo field, is a new gas-condensate discovery. A drill-stem test at 5678-82 feet using 10/64-inch chokes flowed gas and condensate with 1850 pounds flowing pressure. Another drill-stem test at 5636-40 feet, using ¼-inch chokes, recovered 270 feet of oil and 3000 feet of salt water. These perforations have been suqeezed and packer has been set to dually complete the well in both sands. Total depth is 7203 feet with 5½-inch casing set to 6660 feet.

Liberty County: Claud B. Hamill's J. C. Stuart 1, wildcat 6400 feet southwest of production in the North Cleveland discovery area, has been given an initial flow test. The well flowed between 175 and 200 barrels of 39.7-gravity oil daily through ⅛-inch choke with 860 pounds flowing pressure on the tubing. Total depth is 5782 feet with 5½-inch casing set on bottom and perforated for completion at 5770-75 feet.

☆ South Louisiana

Gas-Condensate Strike Made Northeast of Bayou Mallet

Gas-condensate field discovered northeast of Bayou Mallet; deep sand discovered at St. Gabriel; casing set in Holmwood wildcat; Humble still testing Kaplan area wildcat; Gulf of Mexico wildcat below 12,487 feet.

St. Landry Parish: Stanolind Oil & Gas Company's Ezeb Guillory 1 has discovered a gas-condensate producing area 1½ miles northeast of Bayou Mallet field production in section 29-6s-2e. The well is still testing but on initial gauge it flowed 80 barrels of condensate daily through 10/64-inch choke with 2500 pounds flowing pressure on the tubing and gas-oil ratio of 15,000/1. Total depth is 9861 feet with 5½-inch casing set on bottom and perforated for completion at 8952-58 feet.

Iberville Parish: Gravis & Mitchell's Natalbany 2-J has discovered a deep producing sand for St. Gabriel field. On potential the well flowed 209 barrels of 39-gravity oil daily through 7/64-inch choke with 1900 pounds flowing pressure on tubing and gas-oil ratio 1200/1. Production is from perforations at 10,818-826 feet, total depth of hole being 12,331 feet with 7-inch casing set to 10,375 feet and 5-inch liner to 10,935 feet. This well found saturated sands at 10,808-33 feet, some oil shows at 10,723-34 feet, and slight shows at 10,968-81 feet.

Calcasieu Parish: Sohio Petroleum Company has set 7-inch casing to 10,876 feet in the Farmers Land & Canal Company 2, wildcat in the Holmwood area, 26-10s-7w. The casing will be used for protection at present as the test is being drilled deeper. It is unofficially reported that several sands with shows are located behind the 7-inch. This wildcat is approximately 5 miles west-southwest of Bon Air field.

Vermilion Parish: Humble Oil & Refining Company's Alfred Romaine et al 1, wildcat in the Kaplan area, is still testing. A test of perforations at 11,060-68 feet flowed 125 barrels of fluid, 12½ barrels of which was oil. These perforations were squeezed and further tests will be made in the hole. Humble has been unable to shut off the water flow in this well. The latest test is the sixth in a series being made by the company in an attempt to get production.

Terrebonne Parish: Magnolia Petroleum Company's State 1, Mineral lease 673, wildcat in the Gulf of Mexico, is in shale below 12,487 feet. This test, located 6 miles out from Point Au Fer field and 5 miles from land, has 9⅝-inch protection pipe set to 7222 feet. Latest log was run to 10,890 feet.

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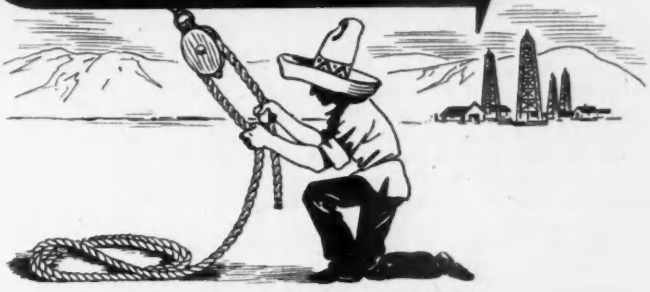

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☆ North Louisiana

Caddo Wildcat Has Shows in Pettit and Travis Peak

Caddo wildcat has gas-distillate show; Delhi field moves ½-mile east in Madison Parish; Haynesville field gets second Smackover deep producer; DeSoto Parish wildcat prepares to test on pump; Cotton Valley field Smackover test below 11,000 feet.

Caddo Parish: Gas-distillate production was indicated in both the Pettit lime and Travis Peak sand at Stanolind Oil & Gas Company's Fred Wappler 1, C NE SW 20-17n-16w, 2 miles south of Greenwood, and east of Waskom production in Harrison County, Texas. Operators may dual complete the test, which went to total depth of 6214 feet. Casing has been set near bottom for production test. The Pettit was marked from 5620-33, and Travis Peak porosity from 6056-73, 6090-6100 feet.

Madison Parish: Two wells in the Delhi field have extended production there another ½-mile east. Kingwood Oil Company's J. M. Frazier 1, NW SW 15-17n-10e, recorded a flow of 232 barrels of 40-gravity oil from perforations at 3346-48 feet. This well is a location west of Pres Cochrane's Frazier A-1, SE NE SW 15-17n-10e, abandoned last year at 4011 feet without shows. C. H. Murphy, Jr., and Sun Oil Company completed J. K. Mahony 1-A, NE SE 16-17n-10e, for 208 barrels of 41.4-gravity oil from 3348-54 feet.

Curtis Kinard's Ayer Timber Company 1, C NW SW SW 19-15n-10e, wildcat 6 miles east of Crowville, recovered sand with gas odor and possible showing of distillate in a core from 5637-41½ feet. It is thought to be a stringer in the Tuscaloosa section. Tuscaloosa was topped at 4927 feet. The test will be carried to the Paluxy sand. The well is of interest because showings so far indicate a pinch-out play possibly like that of the Delhi field in Richland, Franklin and Madison parishes.

Claiborne Parish: The Ohio Oil Company's W. E. DeLoach 1 in 22-23-8w, Haynesville field, offset to the same company's Bond-Beene 1, Smackover discovery, was completed flowing at the rate of 498 barrels of oil on 24-hour gauge through 14/16-inch choke from perforations at 10,064-106 feet. Gas pressure was 1600 pounds.

DeSoto Parish: F. A. Callery's Bessie C. Strauss 1, 19-14-14w, in the Grand Cane-Gloster-Keatchie-Stonewall area, is expected to complete on pump. The well, which was shut down shortly before Christmas pending storage and official test, is considered good for at least 75 barrels daily. It drilled to 7084 feet in the Travis Peak and was plugged back and perforated at 4070-78 feet in the Paluxy zone.

Webster Parish: Cotton Valley Operators' Committee's Sam Banks 2, C SE SW 34-21n-10w, Smackover test in the Cotton Valley field, is drilling below 11,100 feet.

☆ Mississippi

Gulf's Jones County Wildcat Likely to Make Producer

Jones County prospect appears to be making a producer; 2 more extensions for Brookhaven field.

Jones County: Gulf Refining Company's L. L. Majors 1, SEc NE 29-6n-11w, rank wildcat, continues to test encouraging shows after development of 12 feet of oil sand in the Eutaw zone at 7305-18 feet. A subsequent drill-stem test at 7318-28 feet recovered fair shows of heavy oil and cores at 7328-38 developed approximately 6 feet of saturated sand. Several good shows of heavy oil were also recovered from the Tuscaloosa zone below 7400 feet and a drill-stem test at 7403-10 feet recorded a good blow with a recovery of mud cut with heavy oil. Core tests continue.

Lincoln County: Brookhaven field had 2 successful outpost completions. Parker Drilling Company's J. B. Arrington 1, SEc 29-8n-7e, approximately 2 miles north of production, was completed with an initial flow of 610 barrels of 28.9-gravity oil per day. Production is from 270 perforations between 10,410-55 feet opposite the lower Tuscaloosa horizon. Three-fourths mile south of production, Roeser & Pendleton's J. Wroten 1, NW SW 20-7n-7e, pumped 68 barrels of oil plus 15 percent salt water in its initial test. Crescent Drilling Company's J. F. Vernon 1, 31-8n-7e, another outpost attempt, was preparing to install pump after 51 barrels of oil and 30 barrels of salt water were swabbed in 17 hours. In the Mallalieu field a failure was recorded when Cook Drilling Company's B. B. Wilson 1, NE SE 4-6n-8e, was abandoned at 10,681 feet. No shows were noted at any point in the hole and the potentially productive Massive sand zone yielded only water. Humble Oil & Refining Company's Lincoln County Board of Supervisors 1, wildcat in NEc 16-8n-5e, was also abandoned at 10,818 feet with no shows.

Yazoo County: Don Reese's Fouche 1, NEc NW NE 22-12n-1w, wildcat, has been abandoned at 6505 feet in the Tuscaloosa with no shows reported. It is also reported that The Carter Oil Company's Carl Day 1, C NE NE 9-12n-3w, is preparing to abandon after reaching 6505 feet with no encouragement.

Marion County: The Texas Company's L. V. Ladner 2, NEc NW SE 12-1n-17w, Baxterville field, was completed as a good oiler with an initial flow of 195 barrels of 17.2-gravity oil. Two sections of the Massive sand were perforated below 8765 feet and after acidizing with 1500 gallons, production was established. Humble Oil & Refining Company's J. R. Tolar 1, SEc 28-5n-19w, wildcat, is drilling below 8967 feet. Cores at 8580-8708 feet recovered shale with sand stringers. No shows have been reported.

☆ Arkansas

Producing Area Opened Two Miles North of Village Field

Pool opened northwest of Village field; Travis Peak production discovered for Buckner field, Columbia County.

Columbia County: McAlester Fuel Company completed Warnock Estate A-1, C NW NE 6-17s-19w, and opened a producing area 2 miles northwest of Village field. The 2 reservoirs are apparently not connected since the north limits of Village field have been defined by dry holes. The new producer is flowing 50 barrels of distillate and 4½ million cubic feet of gas daily through ¼-inch choke on tubing. Perforations were made at 7412-15 feet in the Smackover lime. The well is bottomed at 7418 feet.

McAlester Fuel Company announced completion of W. C. Dean 1, C NW NW 15-16-22, as the first Travis Peak producer in the deep Buckner field, discovered in 1937. Potential flow is reported at 360 barrels daily, with allowable of 100 barrels. It is an old Smackover producer completed in 1943, at 7308 feet as a pumper, and ruined when salt water got in. It was reworked and perforated from 4056-60 feet. Casing pressure is 370 pounds, and tubing 125 pounds. Gravity is 30.5.

Miller County: The Carter Oil Company's deep test, Philyaw 1, 36-16s-27w, seeking formation around 7500 feet, adjoining the Fouke field, was reported drilling at around 3500 feet, after intermediate pipe was set at 2589 feet.

☆ Ohio

Muskingum County Receives Medina Sand Gas Extension

Brush Creek Township, Muskingum County, has Medina gas extension; gas pool opened in Lorain County; Mifflin pool, Ashland County, extended.

Muskingum County: The Ohio Fuel Gas Company's S. W. Carr 2, SW SE 25, Brush Ceek Township, discovered gas in the Medina sand after finding the Clinton sand with only a showing of gas. Top of the sand at 3988 feet was drilled to 3995 feet, where it gauged 450,000 cubic feet. The well is 3 miles west of the Medina sand oil production and 5 miles south of any Medina gas.

Lorain County: A gas pool was found by Ohio Fuel when its wildcat on Wm. Gilgenbach 1, Lot 26, Ridgeville Township, struck pay in the Clinton sand. The well is 2½ miles south of small pools in the north part of the Town-

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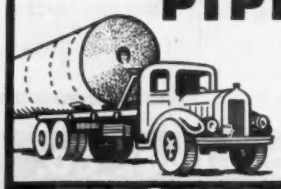
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ship. Clinton was logged at 2477-85 feet and gauged 1 million natural.

Ashland County: Frank Lyons' Thomas Carse 2, NW SW 26, Jackson Township, came in with 300,000 cubic feet of gas and a good show of oil natural. The well was shot and is now flowing 10 barrels a day with ½ million feet of gas. The Clinton at 2940-82 feet is unusually thick for this part of the county. Ohio Fuel moved ⅓ mile northwest of R. G. Hiett to extend the Mifflin pool with a 700,000 foot well on the Edwards-Twitchell Consolidation, SW SW 13, Mifflin Township. The Clinton, at 2636-44 feet, showed some thinning to the north.

☆ Michigan

Five Wildcats, Three Outpost Tries Among State's Starts

Sixteen starts include 5 wildcats and 3 field outposts. The Carter Oil Company made 2 starts, one a 1320-foot south offset to its Oceana County oil discovery in 14-13n-18w, and the other in Mecosta County in 9-14n-7w, the latter ½ mile southeast of the Wheatland outpost producer. Two of the first reports represent bids to extend the North Adams and Deep River pools in Arenac County. Don F. Rayburn is moving in rig a mile northeast of the North Adams pool and Joe E. Bauer is surveying location mile southeast of the Deep River pool.

Allegan County: Two outposts to the old Overisel field are showing for small Traverse lime oil wells and are expected to stimulate new activity. J. O. Mutch's Broekhuis 1, SE NE NW 15-4n-14w, 1 mile east of the field, pumped 20 to 30 barrels of oil after acid from 1546 feet. Joe W. Lang's Michmershuizen 1, NW SE SW 5-4n-14w, 1½ miles north of the Overisel field, pumped 5 barrels initially from 1503 feet.

☆ Illinois Basin

White County, Illinois, Test May Be Aux Vases Producer

White County, Illinois, prospect tests oil; Clay County wildcat swabs oil from Bethel; Franklin County extension try tests Aux Vases; Gallatin County has discovery.

Illinois

W. O. Allen's Ackerman 1, NE NE SW 4-7s-10e, White County, a mile south of the Concord pool, has set pipe to test promising Aux Vases sand at 2900-15 feet. During a 1-hour drill-stem test, the well yielded 2650 feet of clean oil.

Clay County: National Associated Petroleum Company's Golden 1, SW NE SW 17-3n-6e, 2½ miles east of the Kenner pool, swabbed 70 barrels of oil in 24 hours from Bethel sand at 2760-75 feet after a 10-quart shot. Testing continues.

Franklin County: Sohio Petroleum Company's Bosserman 1, NE SE SE 5-5s-3e, a mile west of the Ewing pool, has casing set to test Aux Vases sand at 2830-40 feet. On a 1-hour drill-stem test the well made 1060 feet of oil and 60 feet of oil-cut mud.

Gallatin County: Delta Drilling Company's Ingleton 1, SE SW SW 34-8s-9e, is a discovery 3 miles south of the West Inman pool. It pumped 52 barrels

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of oil in 24 hours from Pennsylvania sand at 1565-80 feet, natural.

Wabash County: F. J. Fleming Berberich 1, SE SE NW 26-1s-14w, a mile east of the Browns pool, gave 2385 feet of oil and 60 feet of oil-cut mud during a 20-minute drill-stem test of McClosky lime at 2965-75 feet.

Marion County: National Associated Petroleum Company's Boyle 1, NW NE NW 21-4n-4e, a Meacham township wildcat, has set pipe for a test of Aux Vases, which showed a slight amount of oil during a drill-stem test.

Indiana

Posey County: B. M. Heath's Stallings 1, NE SW NW 30-5s-13w, midway between the Springfield and North Springfield pools, swabbed 40 barrels of oil per hour, natural, after plug was drilled to Palestine sand at 2005-15 feet. Operator is testing.

☆Rocky Mountain Area

Wyoming Discovery Swabs 127 Barrels on 8-Hour Test

Wyoming Tensleep discovery swabs 127 barrels in 8 hours; Texas prepares to abandon Carbon County wildcat; interesting wildcat located in Sheridan County; third test to be made of Huber-Frontier block in Colorado.

Wyoming

The California Company Tensleep discovery made 2 weeks ago at Quealy Dome in Holst 2, C NE SE 13-17n-77w, Albany County, swabbed 127 barrels of oil in 8 hours for an initial through perforations at 5480-5510 feet. The oil is of 21.5-gravity, asphalt base, and the well is now shut in pending installation of pumping equipment. This is not so large an initial as was expected from a drill-stem test of the section before casing was run, but should give a pumping potential of 300 barrels per day. This well was a deepening from the Sundance sand at 3800 feet and Tensleep formation was topped at 5480 feet. Water was tested on drill stem between 5589-5654 feet, total depth, when the well was drilled. Quealy Dome produces 700 barrels of light oil daily from the Muddy, Dakota and Sundance sands.

At Herrick Dome, 10 miles southeast of Quealy, The Superior Oil Company of California has let contract to Loffland Brothers to go deeper with Herrick 1, SW NW SE 1-16n-76w. This well is now at 2467 feet, total depth, with Sundance formation, the original objective, topped at 2390 feet. Water was reported in cores in the Sundance, and the letting of the new contract probably means this test will go to Tensleep, recently found productive at near by Quealy Dome.

Carbon County: The Texas Company is preparing to abandon its Mill Creek wildcat, Unit 1, NE NE SE 14-20n-81w, at 6389 feet, total depth, after finding water in the Tensleep at 5677 feet. This test has been on a well-known surface structure northwest of the Medicine Bow field and best possibilites of production were in the Sundance and Tensleep formations.

Sheridan County: The Union Oil Company of California has located an interesting wildcat on the northwest side of the Powder River Basin, 10 miles northeast of the town of Sheridan. It is Unit 1, CWL NE NW 24-57n-82w, Badger Creek structure, and is scheduled to test Morrison formation at around 8500 feet. Badger Creek is a surface structure in lower Wasatch beds and has been checked by Union with seismograph. A year ago Texas drilled a dry hole on the Sheridan (Beaver Creek) anticline, 20 miles southwest of the new location in 18-55n-85w, which went to 8447 feet, where it found water in the Madison. Nearest production is in the Billy Creek field, 70 miles south, which makes gas in Frontier horizons.

Colorado

The J. M. Huber Corporation of Borger, Texas, and Frontier Refining Company of Denver have located a third test on their 125,000-acre block in western Baca County, southeastern Colorado, and are moving in equipment for Ingle 1, SW SW SE 27-29s-50e. Sharples Corporation of Denver, who participated in the original drilling operations, has withdrawn from the play. The new location is midway between the 2 previous wells.

Laboratory Set Up

A laboratory of applied geophysics and geochemistry has recently been established at The Pennsylvania State College under the direction of Dr. Sylvain J. Pirson. The program of work includes both resident instruction in fundamentals as well as practical research in the development of new mineral resources. Dr. E. F. Osborn, formerly with the Geophysical Laboratory, Washington, D. C., has been appointed to what is regarded as the first professor of geochemistry. He was also made head of the Department of Earth Sciences.

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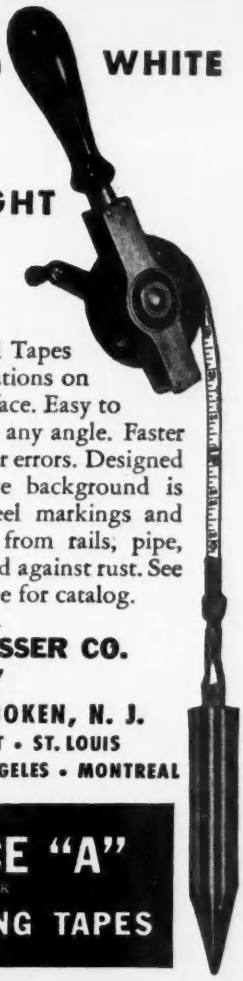

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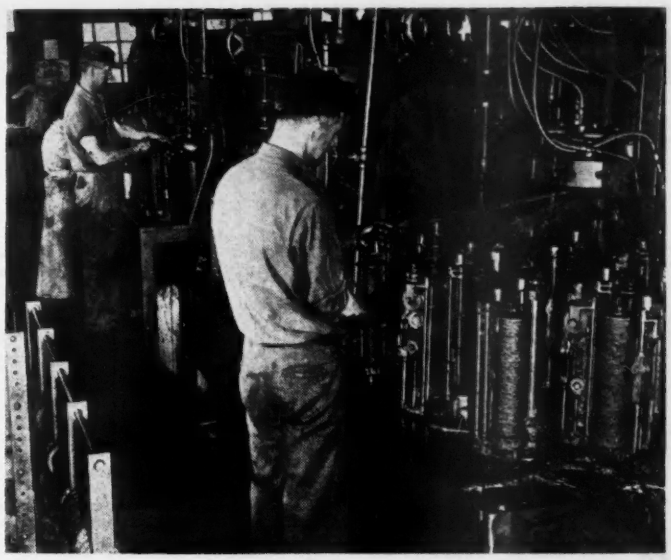

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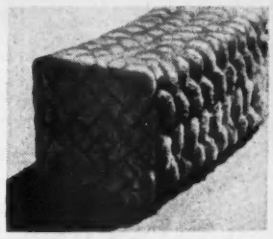

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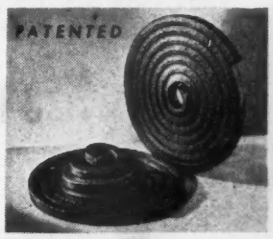

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EXPLORATORY COMPLETIONS

ALABAMA WILDCAT

Geneva County—Failure: Shell's M. C. Free 1, c n se se 5-2n-19e, abnd 12-27-46 at 3750.

ARKANSAS WILDCATS

Columbia County—Distillate Discovery: McAlester Fuel Co.'s R. S. Warnock Est. A-1, c nw ne 6-17s-19w, 2 mi nw Village fld, Smackover li 7388, perf 7412-15, flow 50 bbls dist, 4,500,000 gas, ¼-in, tp 2040 lbs, comp 12-20-46 at 7418.

Little River County—Failures: Richard A. Mason's H. Troth 1, c ne sw 3-14s-28w, abnd 12-20-46 at 3506.

Robt. W. O'Meara's Ed Wood Heirs 1, 3318 fr nl 3934 fr el 7-14s-28w, 1 mi se Ogden, Paluxy 2020, Glenrose 2870, anhy 3110-3200, Travis Peak 3810, Cotton Valley 4530, Smackover li 5260, Eagle Mills 593, abnd 12-23-26 at 5676.

Miller County—Failure: J. P. Owen et al's Amedo-Ritenuti 1, c sw ne se 16-17-27w, Nacatoch 1805, base Annona 2490, Tokio 2901, abnd 12-28-46 at 4025.

Nevada County—Failure: R. A. Young's Grove Ld. and Timber Co. 1, c ne sw se 13-14s-21w, Irma area, abnd 12-24-46 at 3400.

Union County—Failure: L. H. Wentz's Frutell 1, c sw nw 1-17s-17w, abnd 12-24-46 at 3103.

ARKANSAS NEW PAY TEST

Columbia County—Buckner Travis Peak Oil Discovery: McAlester Fuel Co. (was G. H. Vaughn's) W. C. Dean 1, (OWWO) c nw nw 15-16s-22w, depleted Smackover prod, perf 12 shots 4056-60, flow 242 bbls, 12/64-in, tp 125 lbs, cp 370 lbs, comp 12-24-46, td 7308, pb 4075.

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CALIFORNIA WILDCATS

Kern County—Failures: Calumet Gold Mines Co.'s FO'B 2, 31-29s-21e, Temblor area, abnd 12-27-46 at 3012.

Continental's M. & T. 1, 33-28s-29e, Round area, Freeman 1570, Pyramid Hills 2241, Vedder 2422, L. Vedder 2642, abnd 12-31-46 at 2745.

Los Nietos Co.'s Cauzza-Portals 1, 31-29s-29e, Edison area, Santa Margarita 3071, Olcese 4611, abnd 12-19-46 at 4716.

Standard's W. P. 46-33W, 33-29s-21, Sheep Springs area, abnd 12-26-46 at 7658.

San Louis Obispo County—Failures: Buaas Deevlopment Co.'s Jack 1, 19-25s-16e, Cholame area, abnd 12-29-46 at 3400.

Orange County—Failure: Amerada's Irvine 75-7, 7-6s-10w, W. Newport area, abnd 12-27-46 at 6560.

Los Angeles County—Failures: Texas Co., Op.'s Gardena Community 9-1, 26-3s-14w, Gardena area, abnd 12-30-46 at 10,085.

Calumet Gold Mines Co.'s Delaney Cinnabar 1, 24-2s-11w, Whittier area, abnd 12-21-46 at 1276.

Ventura County — Failure: Texas Co.'s Broome 1, 29-1n-20w, Camarillo area, abnd 12-28-46 at 3821.

San Mateo County—Failure: E. T. Willard's 3, 15-6s-5w, Half Moon Bay area, abnd 12-21-46 at 1300.

INDIANA WILDCATS

Gibson County—Oil Discovery: George & Wrather's Beloat 1, 8-2s-10w, flow 160 bbls fr Cypress, 1820-36, td 1841.

Knox County—Failure: J. M. Zanetis' Alexander 1, 21-2n-11w, abnd 1958.

LaPorte County—Failure: Johnson & Wikeland's Morton 1, c ne ne 22-38n-2w, abnd 792.

Sullivan County—Failure: J. W. Menhall et al's Schloat 1, c se ne 12-7n-10w, abnd 2745.

Vanderburg County—Failure: Delta Drlg. Co.'s Simmons 1, nw nw se 10-8s-11w, abnd 2595.

KENTUCKY WILDCATS

Henderson County—Failures: S. C. Lambert et al's Sellers 1, 6-N-24, abnd 1830.

Carter Oil Co.'s Blackwell 1, 7-0-23, abnd 2785.

SOUTH LOUISIANA WILDCAT

Jeff Davis Parish—Failure: Sohio's Adam Bertrand 1, 2016.9 n 670.3 w of sec sect 8 c ne¼ se¼ 8-8s-4w, 3 mi w sw China fld, on E. Edna prospect, abnd 1-1-47 at 10,054.

SOUTH LOUISIANA NEW PAY TESTS

Ascension Parish—Sorrento Oil Discovery: Pan American Prod. Co.'s United Lds. Co. 21, sec 15-10s-4e, pay 3385-3401, perf 48 shots 3388-3400, flow 59 bbls 27.8-gr oil, 0.1% wtr, 15/64-in, gor 250/1, comp 12-17-46 at 3619.

Cameron Parish—Black Bayou Oil Discovery: Shell's Watkins 67, 990 s 120 w of nec 12-12s-13w, pay 8220, perf 60 shots 8220-35, flow 292 bbls 37-gr, 9/64-in, gor 733/1, comp 12-23-46 at 8601.

Iberville Parish—St. Gabriel Oil Discovery: Gravis & Mitchell's Natalbany 2-J, sec 12-9s-1e, perf 48 shots 10,818-26, flow 209 bbls 29-gr oil, 0.1% wtr, 7/64-in, gor 1200/1, comp 12-26-46 at 12,531.

Jeff Davis Parish—S. Jennings Distillate Discovery: Stanolind's S. Jennings Unit 8, swc ne¼ 15-10s-3w, pay 10,923, perf 36 shots 10,925-36, flow 44.64 bbls 45.5-gr, 740,000 gas, 6/64-in, gor 16,558/1, comp 12-10-46 at 12,034.

MICHIGAN WILDCAT

Allegan County—Failure: C. W. Cook's Belfort 1, nw ne nw 17-4n-12w, abnd 12-27-46 at 1672.

Gladwin County—Failure: C. W. Teater's Burke 1, ne ne ne nw 36-20n-1w, Dundee lime 3516, abnd 12-29-46 at 3771.

Ionia County—Failure: Oil Producers' Cook 1, sw nw nw 11-7n-5w, abnd 12-24-46 at 2915.

Isabella County—Failure: Bliss M. Keeler's Johnson 1, nw nw se 32-13n-5w, Dundee 3506, so&w 3512-17, abnd 12-29-46 at 3547.

Montcalm County—Failure: Ide Oil Co.'s Itzenhouser 1, nw se se 36-12n-9w, abnd 12-26-46 at 1212.

Ottawa County—Failure: Rex Oil Co.'s Zuwerinka 1, ne ne sw 29-6n-14w, abnd 12-28-46 at 1675.

MICHIGAN OUTPOSTS

Allegan County—Overisel Extensions: J. W. Lang Co.'s Michmershuizen 1, nw se sw 5-4n-14w, Traverse lime 1485, pump 5 bbls, comp 12-26-46 at 1500.

J. O. Mutch's Borekhuis 1, se ne nw 15-4n-14w, Traverse 1540, pump & flow 25 bbls, comp 12-29-46 at 1546.

MISSISSIPPI OUTPOSTS

Lincoln County—Brookhaven Extensions: Parker Drlg. Co.'s J. B. Arrington 1, sec 29-8n-7e, 2 m n prod, flow 610 bbls 28.9-gr fr

270 perf at 10,410-455, L. Tuscaloosa, comp 12-29-46 at 10,494.

Roeser & Pendleton's J. Wroten 1, nw sw 20-7n-7e, ¾ m s prod, pump 68 bbls 31-gr oil fr perf at 10,492-508, 10,512-522 in L. Tuscaloosa, comp 12-26-46 at 10,560.

MISSISSIPPI WILDCATS

Clarke County—Failure: Sun's Long Bell Pet. Corp. 3, sec 17-2n-17e, Wilcox 655, Eutaw 3710, Tuscaloosa 4142, abnd 1-1-47 at 4204.

Forrest County—Failure: H. H. Duck-Willis Hughes' C. O. Herchenhahn 1, nw sw 13-5n-12w, Wilcox 2250, Chalk 5616, Tuscaloosa 7380, Massive sd 8732, Comanchean 8870, abnd 12-29-46 at 9005.

Lincoln County—Failure: Humble's Lincoln Cty. Bd. Supervisors 1, nec 16-8n-5e, abnd 1-1-47 at 10,818.

Sharkey County—Failure: J. Willis Hughes' Houston Estate 1, c ne ne 4-10n-7w, Wilcox 1727, Gas Rock 3449, Comanchean 3470, abnd 12-27-46 at 4024.

Washington County—Failure: Ormond Corp.'s D. Wynn 1, sec 12-17n-8w, Wilcox 1760, Eutaw 4220, Tuscaloosa 4580, abnd 12-29-46 at 6014.

Yazoo County—Failure: Don Reese's Fouche 1, nec nw ne 22-12n-1w, Wilcox 1770, Eutaw 5625, Tuscaloosa 6440, band 12-30-46 at 6505.

OHIO WILDCAT

Lorain County—Gas Discovery: Ohio Fuel Gas Co.'s Wm. Gilgenbach 1, Lot 26, Ridgeville Township, 2½ s of prod, Clinton 2477-85, flow 1,010,000 gas, comp 12-30-46 at 2490.

OKLAHOMA WILDCATS

Comanche County—Failure: Pettigrew Oil Co.'s Daniel 1, ne ne se 15-1s-12w, abnd 2103.

Cotton County—Failures: Nantz & Johnson's Breman 1, nw ne ne 23-2s-10w, abnd 2501

Lee R. Gower's Powell 1, se se sw 15-3s-10w, abnd 1807.

J. E. McDonald's School Land 1, se sw sw 33-3-10w, abnd 1526.

Charles A. McCann's Shaw 1, se se sw 9-3s-12w, abnd 2501.

E. W. Whitaker's Zeicker 2, se sw nw 20-3s-12w, abnd 1800.

Bridwell O&G Co.'s School Land B-1, se nw nw 36-3s-11w, abnd 1894.

Paul Fleeger's Tisdale 1, se sw nw 14-3s-13w, abnd 2184.

Hedrick & Martin's Archer 1, ne sw nw 14-3s-12w, abnd 1648.

Featherstone Oil Co.'s Bowman 1, sw sw ne 29-4s-12w, abnd 2909.

Creek County—Failures: Cowan & Clark's Cramer 1, se sw sw 14-15n-7e, abnd 1902.

E. C. Kadane & Son's Douglass 1, c se 27-17n-11e, abnd 2564.

Dewey County—Failure: Oklahoma Nat. Gas. Co. et al's Oakwood Unit 1, nw nw nw 6-17n-14w, abnd 12,610.

Garfield County—Failure: Davon Oil Co.'s Hemkin 1, sw sw ne 5-23n-4w, abnd 6200.

Garvin County — Failure: J. E. Crosbie's Newbern 1, nw sw se 15-4n-2e, abnd 3505.

Jefferson County—Failure: J. E. Sullivan's Stallings 1, se sw se 10-4s-4w, abnd 784.

Kay County—Oil Discovery: Westgate-Greenland's Wentz 1, sw se nw 28-28n-1e, pump 16 bbls fr Burgess sand 3524-40, td 3560.

Kiowa County — Failures: F. A. Gallary's Schafer 1, nw nw sw 1-7n-16w, abnd 5880.

Smith & Debolt's Nickle 1, sw se nw 23-7n-18w, abnd 1242.

N. C. Watters' Nickle 1, se se nw 23-7n-18w, abnd 1226.

Lincoln County—Failure: Carter Oil Co.'s Walker 1, c sw ne 22-12n-6e, abnd 3400.

Wofford, Nicholson & Rose's School Land 1, ne nw sw 16-15n-6e, abnd 4251.

Logan County—Failure: Peppers Ref. Co. et al's Ewing 1, se se sw 14-15n-2w, abnd 6180.

Payne County — Failures: Cities Service's Wetzel 1, se se se 9-18n-1e, abnd 5218.

Jack White's Mitchell 1, se se nw 3-20n-2e, abnd 4150.

Seminole County—Failure: Standard of Kansas' Roberts 1, sw sw se 15-10n-7e, abnd 3568.

Tillman County—Failures: S. D. Johnson's Mount 1, sw sw nw 23-4s-14w, abnd 2284.

Akin & Dimock's Reynolds 1, ne se se 4-4s-15w, abnd 2194.

WEST TEXAS WILDCAT

Ward County—Scott Field Oil Discovery: Continental's F. H. Scott 1, 330 out of cor H&TC Ry 33, blk 33, partially junked and temp abnd 3-23-46, elev 2548, anhydrite 1250, Delaware lime 4812, sand 4835, shot 40 qts nitro 4850-65, heads 10 bbls 40-gr, 2-in, fr open hole 4850-4910, comp 11-15-46 at 4920.

NORTH TEXAS WILDCATS

Archer County—Failures: B.O.M. Oil Co.'s Conner 2, 400 snl 2000 ewl blk 106, Harris sbdn, elev 1002, abnd 12-15-46 at 1479.

W. T. Graham et al's Campbell 1, 330 out swc n½ BBB&C Ry. sur, elev 1169, Gunsight 990, Home Creek 1650, L. Palo Pinto 2840, Smithwick 4595, Bend 4628, Mississippi 5238, abnd 12-27-46 at 5279.

Clay County—Failure: Sussex Oil Co.'s Ramsey 1, 2600 nw of s cor 150 ewl J. G. Hays sur, elev 903, abnd 12-26-46 at 1902.

Baylor County—Failure: W. F. Palmer 1, 150 snl 2200 wel J. H. Barclay sur, abnd 12-27-46 at 1330.

Cooke County—Failure: A. R. McElreath-J. D. Suggett-Kingery Bros.' Brown 1, 660 out nec R. F. Millard sur, elev 833, Bruhlmeyer 3126, Simpson 5380, Ellenburger 5750, abnd 12-22-46 at 5835.

Wise County—Failure: Taylor and Robt.

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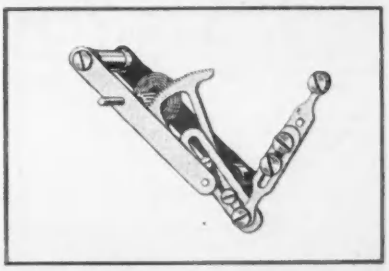
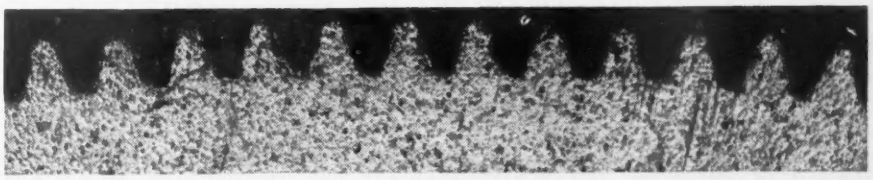
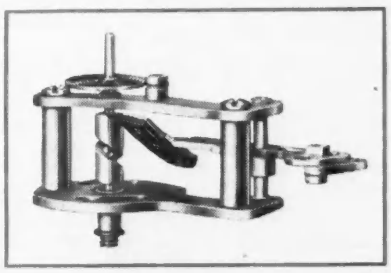


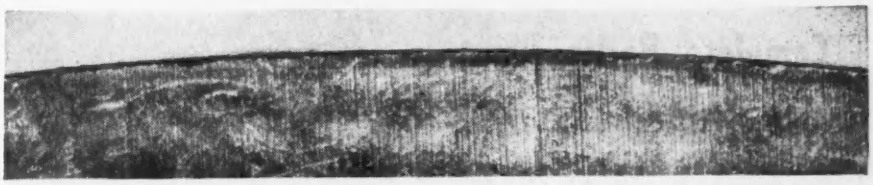
1 The movement of the ordinary pressure gage operates by means of a toothed segment and a spur gear as shown at right.



2 Magnified 12 times, the teeth of this new, unused sector are jagged – anything but uniform. Pinion teeth are cut the same way. Friction, wear and consequent inaccuracies are caused by these rough surfaces rubbing together.



3 Helicoid Gage movement has a polished, graphited Bakelite cam and a polished helicoid roller – instead of sector and pinion.



4 Cam of Helicoid movement magnified 12 times, shows smooth, polished surface. Helicoid roller surface is also highly polished. Longer wear and smoother operation result from these two polished surfaces in rolling, point contact.

Only Helicoid Gages have the Helicoid movement. That is one of several reasons why Helicoid is a better, longer-lasting pressure gage.

Write for our complete catalog.

ACCO

HELICOID GAGE DIVISION
AMERICAN CHAIN & CABLE
Bridgeport 2, Connecticut

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The OIL WEEKLY'S TRADING POST

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CLASSIFIED ADS . . . EQUIPMENT . . . SERVICES . . . PERSONNEL

FOR SALE

■ For Sale—Star Drilling Machines. 1—No. 45 ST Spudder. 1—No. 47 Beam Machine. 1—No. 28 ST Beam Machine. All in running condition. Also 2—No. 30 Star Machines. Beaumont Petroleum Co., Beaumont, Kansas. Phone 16 after 6:00 P.M.

■ Lumber for sale: 5 cars 3 x 12—10′ to 16′ Hardwood $49.00. 5 cars 3 x 6 & wider Hardwood roadway lumber $43.00 to $49.00. Fir timbers 12 x 12 & larger 40′ to 120′ in length. 1 x 2 and 2 x 2 Surveyor stakes. Hardwood pallets for sale. E. J. Galenne Lumber. Box 1074, Shreveport 89, La.

■ Failing Model 36 core drill, mounted on 1942 K-6 International Truck with new motor, 480 gallon water truck, mounted on 1941 K-5 International Truck with vacuum lift and Braden winch. 410 Ft. of "N" drill rods. All operating equipment and small tools. All in first class condition ready to go to work. $9,000. Address: Box 115, c/o The Oil Weekly, Houston, Texas.

■ White, Model 630, tandem truck with heavy duty winch and oil field body, new 9.00 x 20 tires. Excellent for heavy winch work on location. $2,000. Box 116, c/o The Oil Weekly, Houston, Texas.

■ Cardwell K. L. Double Drum Rotary Drawworks. G. K. 145 Waukesha engine, perfect condition, can see operating. New 34 Tulsa Winch. 5 sheave 100 ton dreadnaught crown block. P. O. Box 709, Phone 596, Conroe, Texas.

■ FOR SALE—Complete Work-over Machine with all necessary equipment. Franks Drawworks with 150 hp Waukesha Motor, 94′ 315,000 Cap. Lee C. Moore Cantilever Derrick. Wilson-Snyder 5 x 12 pump with 140 hp Waukesha Motor. Koelar Light Plant. Cameron Valves and all blow-out equipment. Small tools. This rig is complete and ready for operation. May be inspected at Refugio, Texas.

FOR SALE

Complete Barite Plant

With 20′ drier, 20′ self feeding ball mill, Air Classifier, Conveyors, Motors, Sacking Machine, Building and Fixtures. Capacity approximately 5 tons per hour. Ready to run. Located at Kinder, Louisiana. Contact X. R. Randall, Trustee, Missouri Barium Corp. P. O. Box 831, Beaumont, Texas.

FOR SALE

■ 5 Complete Reda Pumping Units. Cables like new. 75 and 97 H.P. Motors. Max Steinbachel, 1905 Park Place, Wichita 4, Kansas. Phone 5-6082.

■ Well drilling machines, Fort Worth, Wichita, Keystone, Star spudders, standard outfits; Sullivan drills, steel derricks, tools, cable. All equipment overhauled or rebuilt and guaranteed. S. W. Pressey, Pueblo, Colorado.

Priced for quick sale, complete drilling rig, 128′ derrick, Waukesha motors and complete equipment. Contact F. J. Finch, Lesco Drilling Co., 427 Elm Street, Graham, Texas.

MAP CABINET: Oak finished plywood cabinet that stands against wall. Protrudes only 10 inches from wall, is 4 feet long and 5½ feet high, 48 four-foot long rolled maps of any diameter, or larger number of small maps, made easily accessible on individual horizontal shelves in three movable sections. Price $25.00. Editorial Department, The Oil Weekly, Box 2608, Houston, Texas.

HAVE AVAILABLE FOR IMMEDIATE SHIPMENT ALL PARTS FOR 2-CYLINDER WAUKESHA AIR-COOLED ENGINE, TYPE 150-U. Little Giant Tree Feller Corp., 202 South Haskell Ave., P. O. Box 695, Dallas 1, Texas.

HELP WANTED

■ Land man for company operating throughout Midcontinent. Must be well rounded and should have wide acquaintance and knowledge of Gulf Coast areas although not absolutely necessary. Replies will be confidential. Box 106, The Oil Weekly, Houston, Texas.

■ GRAVITY PARTY CHIEFS AND OPERATORS with experience for domestic work in new fast-growing concern. College degree desired but optional dependent on experience. Exploration Surveys, Inc., 1914 North Harwood St., Dallas 1, Texas.

■ **WANTED ESTIMATING ENGINEER**—Man with engineering degree preferred. Should have practical experience in estimating in petroleum refining plants, chemical plants or related industrial plants. Experience should include estimating of industrial buildings, structural steel, concrete foundations, process equipment, piping and electrical work. Major petroleum company in Chicago. Give complete details first letter. Address Box 118, The Oil Weekly, Houston, Texas.

■ Experienced Reflection Computers for Party Chief training by contracting company. Give experience, education, age, and telephone number. Our employees know about this Ad. Box 119, Oil Weekly.

Attractive position for experienced seismograph party chief. Considerable opportunity. Permanent location. Apply in care of Box 117, The Oil Weekly, Box 2608, Houston 1, Texas.

EXPERIENCED PARTY CHIEFS—SEISMOLOGISTS AND OBSERVERS

are wanted for foreign seismic parties

United Geophysical Company, Inc.
595 East Colorado Street, Pasadena 1, California
822 Thompson Building, Tulsa 3, Oklahoma

Nail's Coffman 2, 150 snl 400 ewl A. C. Coffman sur, abnd 12-27-46 at 1060.

EAST TEXAS BORDER COUNTIES WILDCAT

Angelina County—Failure: D. H. Byrd's Angelina County Lbr. Co. 1, 340 n 350 w of sly sec 2018.8-ac lse blk 6, Jesus de la Garza sur, 3 mi s Wells. Wilcox 1099, Midway 3906, Navarro chalk 5048, Pecan 5167, Woodbine 6514, Comanche shale 6646, Buda 6752, Ft. Worth 7064, Duckcreek 7142, Kiamichi 7290, Goodland 7427, abnd 12-27-46 at 7515.

SOUTH CENTRAL TEXAS WILDCAT

Edwards County—Failure: Shell's J. H. Brown 1, 1985 fr sl 1980 fr el LI&AA sur 9, 424-ac lse, 5 mi ne Rock Springs, Ellenburger li 4350, abnd 12-22-46 at 5718.

SOUTHWEST TEXAS WILDCATS

Webb County—Failures: Killam & Hurd's D. G. Garcia 1, 1100 w of el blk 9, 330 s of nl sur 786 and of blk 8 in same sur, on 120-ac lse, ½ mi ne Oilton, abnd 10-22-46 at 2019.

Texas Co.'s O. G. Kirkpatrick 1, 2310 fr n&el CCSD&RGNG sur 25, 5447-ac lse, 5½ mi nw Lopez fld, abnd 12-20-46 at 1608.

LOWER TEXAS COAST WILDCATS

Nueces County—Failures: H. M. McCullough's Maggie Kelly 1, 467 fr n&el 118.4-ac lse, A. F. Martin sur 150, ½ mi s Baldwin fld, abnd 12-14-46 at 4008.

Wil-Tex Oil Corp.'s C. H. Cock 1, 990 fr wl 330 fr nl 80-ac lse, 1½ mi se Shield fld on Stanolind farmout, abnd 12-20-46 at 8260.

Nueces County—Oil Discovery: Rand Morgan's Fee 1-A, 849 fr sl 2098 fr el 411-ac "A" tr, 1839 fr nl tr in sect 5, 1 mi ne Richard King fld, pay 5604, perf 5605-09, flow 414 bbls, 3/32-in, gor 5965/1, comp 12-15-46 at 5848.

Refugio County—Failure: P. R. Rutherford et al's Fred W. Fagan 2-F, 1400 fr el 2800 fr sl 640-ac "F" lse and 2850-ac lse, 23,500 fr sl 17,000 fr nl Mary Byrne sur, 1½ mi e se Fagan fld, abnd 12-23-46 at 5948.

LOWER TEXAS COAST NEW PAY TESTS

Nueces County—N. Minnie Bock Oil Discovery: Atlantic's Lee M. Dugger 1, 1787 fr el 467 fr nl 320-ac lse and sect 53, G. H. Paul sbdn of Driscoll Rch, perf 6138-43, flow 120 bbls 39.6-gr oil, 0.1% wtr, 3/16-in, gor 515/1, comp 12-19-46 at 8510.

San Patricio County—Midway Gas Discovery: F. M. Boykin, Jr.'s H. H. Hutto 4, 467 fr wl 1160 fr nl 160-ac lse, nw¼ sect 81, G. H. Paul's sbdn CFP Co. Ld., pay 3630, perf 24 shots 3630-38, flow 20 mln dry gas open, shut in pressure 1500 lbs, comp 12-15-46 at 3660.

UPPER TEXAS COAST NEW PAY TEST

Galveston County—High Island Oil Discovery: J. W. Mecom's E. Ker Cade et al A-6, 990 fr el 320 fr sl W. M. Hudson sur, 430-ac lse, deepest field prod, pay 7141, perf 54 shots 7141-59, flow 371.14 bbls 34.1-gr, 3/16-in, gor 570/1, tp 1025 lbs, cp 1150 lbs, comp 12-24-46 at 7359.

SERVICES

■ Oil Industry Employment Service, P. O. Box 2603, Tulsa, Oklahoma. For technical and trained personnel. Licensed. Bonded. Confidential. No agency charge.

WANTED TO BUY

■ Wanted for Cash—3000 ft. portable rotary rig. Must be in A-1 condition. O. W. Killam, Laredo, Texas, Phone 578.

SITUATIONS WANTED

■ GEOLOGIST AVAILABLE FOR PART-TIME CONNECTION IN HOUSTON. Box 120, c/o The Oil Weekly, Houston, Texas.

ADVERTISING RATES

Trading Post Section

Regular classified advertisements for this special section, set in type this size without border, take flat-rate of 7 cents per word for the first insertion and 5 cents per word for each subsequent insertion of same copy. Display advertisements for this section, set in suitably larger type with ruled border, are $5.00 per inch for the first insertion and $4.00 per inch for subsequent insertions. Remittance must accompany copy which should be sent to:

Trading Post Section, The Oil Weekly
P. O. Box 2608 Houston 1, Texas

SQUEAKS from the BULL WHEEL

The Practical Side

Teacher (to history student): "You want to know why you didn't pass in your history test? Well, your answer to the question, 'Why did the pilgrims go into the wilderness' was interesting from the standpoint of sanitation, but it was still incorrect."

Crunchers Don't Crush

A man and a little boy on an elevator were jammed tighter and tighter against the far wall as more people poured on.

Finally, a nice old lady standing just in front of the lad inquired of the man: "Aren't you afraid he'll be crushed?"

"No ma'am. He bites."

Young Ideas

"How come your grandma reads the Bible so much?"

"She's studying for her final examinations."

Kilroy Was Here

An ex-GI, plenty sick of being ordered around in the Army, was filling out his income tax blank when he came to the part marked, "Do not write in this space."

Incensed at this limitation on his personal liberty, he penciled in the forbidden space: "I will write where I damn please!"

Drinking Table

2 pints.....1 quart
4 quarts.....1 gallon
1 gallon.....1 argument
1 argument.....1 fight
1 fight.....2 policemen
2 policemen.....1 judge
1 judge.....$25 or 7 days

Dark Outlook

"Where did you get that black eye?"

"Went to a dance at the hotel last night and was struck by the beauty of the place."

Poet's Nook

My dearest wife, you're getting old,
Your hair is grey, the years have told
I'd take a fling
At young romance
When tempted by
A youthful glance,
If only, when such charmers look,
I could forget how well you cook.

Voice of Experience

"Something's wrong with me, Grandmother," sighed the young lady. "I've been a bridesmaid twice, I caught the bride's bouquet, too, but I'm still single."

"Well, dear," advised Grandma, "next time don't reach for the flowers, reach for the best man."

Nice Try, Anyway

A fellow with the d.t.'s informed his doctor that a cat was prowling around in his stomach and demanded that it be removed at once.

Thinking a fake operation might clear up the patient's delusion, the doc went into his act, complete with white gown, pretty nurse and gleaming instruments. Then he applied the ether and sent for a cat.

And so it came to pass that the patient awoke and blinked at a big, black cat sitting on his chest. At length he let out a sad sigh. "No, Doc, you'll have to try again. The cat that's creating all the commotion in my stomach is a GRAY cat."

Not Bottled in Bond

They were on the fag end of a week-old spree in which they had consumed much, much whiskey. On the last day, somebody got the idea that a game of golf would freshen them up before they left for home. So, red of eye and shaky of limb, they tottered out on the golf course, which happened to be adjacent to the zoo.

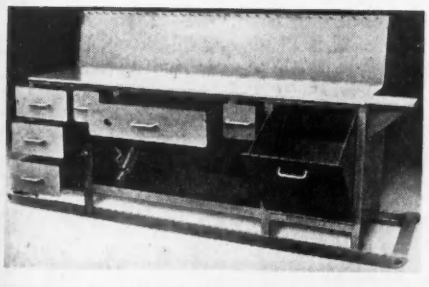
On the first tee, one of them laid fumbling hands on his club and squinted down at the ball, which seemed about as big as a pinhead and jiggling up and down besides. Quivering like an aspen leaf, but dead game, he raised the club with a mighty effort. At that moment, a spotted leopard, which had escaped from the zoo, dashed up and ran between his legs. Down came the club head and the ball zoomed down the fairway.

"What a shot!" his companions howled. "And with that leopard running between your legs, too!"

"Good gosh A'mighty! You mean that was a real, live leopard?"

OWEN

TYPE "A" WORK BENCH



PLENTY OF STORAGE ROOM

There's space in this all-steel, all welded bench for all the hand tools on any drilling rig. Six big drawers and a rag bin, with a total of over 14 cubic feet of storage space, plus the tool pegs on the back apron, provide room for protecting all tools against loss or damage.

Buy one for each rig you own . . . and they'll pay for their cost in the savings they effect.

SOLD THROUGH ALL SUPPLY STORES

Distributed in California by Howard Supply Co., Los Angeles, California.

OWEN TOOL COMPANY
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HOUSTON TEXAS

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DEEP WELL SWABS

Field production men set the specifications for this new Swab. It does the job they asked for. Large fluid clearances for quick, free dropping. Pulls light or heavy loads from great depths. No fluid loss, complete load each trip. Sensitive rubbers automatically adjust to right wall pressure for weight of load. Rubbers firmly supported yet easily preset to irregular tubing I.D.'s and to compensate for wear. Simple design. Easy to operate on rig floor. Standard cage, ball and seat, replaceable anywhere. Quickly tandemed. Actually cuts swabbing costs and time.

Large fluid passage.
Standard reversible ball and seat.
Rubber quickly changed on job.
Break here to install rubber.
Rubber easily adjusted—0.42" under tubing I. D.
To expand rubber make up on cup.
Two reinforced PBX Special Rubbers used.
API threads. Lead compounded for easy break.
Alloy steel throughout. Heat treated to maximum tensile strength. Rust proofed per Navy specifications.
Break here to tandem swab.
Large internal area, streamlined, reduces tendency to blow out of hole.

Write for Catalog No. 340

Specify PATTERSON-BALLAGH
A DIVISION OF BYRON JACKSON CO
"Best Bet Yet"

DEEP WELL SWABS

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6247 Navigation Boulevard, Houston 11
808 Graybar Building, New York 17
931 Russ Bldg., San Francisco 4

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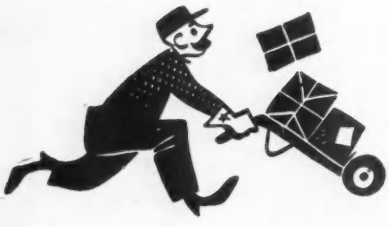
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MEN IN THE INDUSTRY NEWS

Kenneth Ackley, Mattoon, Ill., former chief scout for The Carter Oil Company, who was recently promoted to assistant to **Carl Herrington,** division superintendent, has been appointed exploration manager for the company. He will remain at Mattoon division headquarters. **Lee C. Lamar,** division geologist, has been transferred from the Eastern Division to Tulsa, and **R. M. English,** assistant division geologist, has been promoted to division geologist of the Eastern Division.

Kenneth R. Ackley

»

Leroy Cockrell and **Harold G. Picklesimer** have joined Sunday Oil Corporation's San Antonio district staff. Both were formerly with Arkansas Fuel Oil Company. Cockrell will be landman and Picklesimer will do geological work. **Don Chapell** is Sunday's district geologist for South Texas and manager of the San Antonio office.

»

Dean C. Shackleford, chief scout for The Pure Oil Company in Michigan for nine years, has been transferred to Billings, Mont., in Pure's Rocky Mountain land and scouting division. **Harry Gaspeny,** Pure field scout for eight years, was promoted to chief Michigan scout.

»

Earl Vandale, Texas Panhandle district land man for Magnolia Petroleum Company at Amarillo, has retired, and has been succeeded by **O. F. Beaty,** formerly district land man at Great Bend, Kansas.

»

C. V. Stinchecum, South Oklahoma district land man for Magnolia Petroleum Company at Duncan, has been retired under the company's annuity plan, and future operations in the district will be handled by the Oklahoma City office.

»

E. F. Fullen was appointed district superintendent of production department operations in the reorganized Southeast Texas District of Pan American Production Company. The district comprises the following counties: Liberty, Hardin, Jasper, Newton, Orange, Jefferson, Chambers. His headquarters will be in the Olive field, in Hardin County, where he was previously in charge as production foreman.

»

Henry L. Rankin, Houston, retired January 4 after 26 years with the Gulf Oil Corporation and Gulf Refining Company. He was assistant insurance commissioner for the Gulf production and pipe line divisions and secretary-treasurer of the Gulf Casualty Company.

»

E. O. Buck, manager of Rowan Drilling Company's Gulf Coast division, will speak before the Houston Geological Society January 13 on "Engineering and Geological Principles of Oil Well Drilling."

Charles E. Spahr has been named Assistant to the vice president in the transportation department of The Standard Oil Company (Ohio). Spahr joined Standard as an engineer in the transportation operations division in October, 1939, and served with the army in India-Burma from 1941 through 1945.

»

E. C. Brown, president of Brown Drilling Company, Long Beach, Calif., has returned from Saudi Arabia, where his company is drilling a number of wells for Arabian American Oil Company. Brown stopped at London and Cairo en route.

»

Frank Short, formerly with the California Division of Industrial Safety, has joined the Western Oil and Gas Association as consultant in the proposed revision of the State Electrical Safety Orders.

»

Ernest R. Farley, fuel oil manager for Shell Oil Company on the West Coast, has retired after 34 years' service with the company. He joined Shell in 1913 as a statistician and was named manager of fuel oil sales in 1916.

»

Carl T. Newcomb, manager of operations for Richmond Petroleum Company of California, Standard Oil of California subsidiary, recently received his 35-year pin from R. C. Stoner, Standard vice president.

»

L. W. Storms of Bryan, Texas, has left for Caracas to join the production staff of Creole Petroleum Corporation.

»

Cary F. Gross, cashier for Shell Oil Company in the Texas-Gulf Area since its organization in 1933, has retired. In recognition of his 27 years of continuous service with the organization, he was presented with a gold watch by fellow employes.

Bottom Hole
Sampling and Analysis

Will show you how to increase oil recoveries. This service gives you . . .

1. Saturation Pressure
2. Solution Gas Oil Ratio
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Alamo National Building
Phone C-7832 — Night P-24096
San Antonio 5, Texas

Dr. G. Acosta

Dr. H. Madero Paris

Dr. Gonzalo Acosta and **Dr. Hernando Madero Paris** head Acosta, Madero Paris &Cia., new firm in Bogata, Colombia, that is offering consulting work in petroleum, civil and construction engineering. The firm will also become the Colombia headquarters for Transamerican Factors, Ltd., equipment representatives for several California manufacturers.

With the Ministry of Mines and Petroleum, Colombia, since 1943, Dr. Acosta was formerly petroleum engineer for The Texas Company at Fort Worth. Dr. Paris was associated with the Ministry of Mines and Petroleum at Bogata since 1942. He also was formerly a petroleum engineer in Kansas and Texas for Magnolia Petroleum Company.

THE OIL MAN'S CALENDAR

JAN. 16–17	Annual Meeting AAPG, Mid-Continent Region, Wichita, Kans.
21	National Petroleum Council Meeting, Washington, D.C.
MAR. 17–19	AIME World Conference on Mineral Resources, New York, Waldorf-Astoria Hotel.
20–22	AIME 75th Anniversary Celebration and Annual Meeting, New York, Waldorf-Astoria Hotel.
APRIL 7–10	National Association of Corrosion Engineers, Annual Convention, Chicago, Palmer House.
16–18	Eastern District, API Division of Production, Spring Meeting, Pittsburgh, William Penn Hotel.
23–25	Natural Gasoline Association of America, Annual Convention, Dallas, Baker Hotel.
APRIL 30 MAY 1– 2	American Gas Association, Natural Gas Division, Spring Meeting, Chicago, Stevens Hotel.
6– 8	Petroleum Industry Electrical Association and Petroleum Electrical Supply Association, Joint Convention, Houston, Rice Hotel.
15–16	Pacific Coast District, API Division of Production, Spring Meeting, Los Angeles, Biltmore Hotel.
22–23	Mid-Continent District, API Division of Production, Spring Meeting, Amarillo, Texas, Herring Hotel.
MAY 12–17	South American Petroleum Congress (ISAP), Lima, Peru.

Nomads Chapter monthly meetings: LOS ANGELES, second Wednesday, Mayfair Hotel. Houston, second Monday, Ye Olde College Inn. NEW YORK, first Monday, Louis Sherry's. TULSA, third Wednesday, Hotel Tulsa. DALLAS, date not yet fixed.

C. T. Jones, head of Stanolind Oil & Gas Company's exploration department for the Rocky Mountain Region, has been transferred to Tulsa to take charge of the geophysical department.

»

R. B. Francis, formerly with Southport Petroleum Company, Texas City, has joined the Chalmette Petroleum Corporation, New Orleans, as head of its crude purchasing department.

George W. Clarke, manager of the exploration department for Stanolind Oil & Gas Company, Tulsa, was named director of exploration, and **J. E. Rouse,** who has been in charge of the manufacturing department, was named director of production and manufacturing.

»

J. E. Chapman, master mechanic, was promoted to mechanical superintendent of Pan American Pipe Line Company.

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FAST
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of slush pumps
"American"
COMPOUNDING
VALVE!
Fastest, most efficient and effective compounding valve on the market! This widely used "American Slush Pump Compounding Valve speeds up the compounding of slush pumps because it opens and closes automatically! Thanks to its simple design and ease of operation, it will last almost a life time. Manufactured of high grade cast steel. Tested to 5,000 lbs. pressure and has a working pressure of 2,500 lbs.
AMERICAN
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Remember, there is an "American" service man in every active field!

Walter L. Sturtevant, chemical engineer at the Manhattan Rubber Division plant, Raybestos-Manhattan, Inc., Passaic, N. J., was honored on his retirement at a dinner December 17. Sturtevant had been chemical engineer since 1931 and had represented Manhattan on various government and scientific committees. Before 1931 he was chief chemist and assistant superintendent in charge of laboratory, mill and calender departments.

Kenneth J. Langley has been named representative for McCullough Tool Company, Los Angeles, in Argentina, Brazil, Paraguay, Bolivia, Uruguay and Chile.

»

H. W. Mathews was appointed division production superintendent at Midland, Texas, and **R. W. Harrison,** chief engineer at Houston for Standard Oil Company of Texas.

PARACUT IS THE MOST EFFICIENT, INEXPENSIVE, SAFEST MEANS EVER DESIGNED FOR REMOVAL OF PARAFFIN FROM FLOW LINES

PARACUT METHOD

COST ONLY $1.15 A MONTH

PROVED in more than 2000 test applications under all known conditions, the patented PARACUT method for removing hydrocarbon deposits from flow lines is the answer to the universal paraffin problem. PARACUT is a soluble abrasive that forms a flexible, abrasive plug with thousands of miniature cutting edges to mechanically cut away paraffin or other line deposits. The PARACUT method offers many advantages. It is easy, fast and safe to use. It is inexpensive . . . efficient. Write now for details.

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Deaths

Verne H. Van Horn, 54, Tulsa, manager of the Trusts Operating Division, Southwest Company, died January 7. A Tulsan since 1912, Van Horn had been connected with various oil field supply firms since 1910. Until 1920 he was purchasing agent for Cosden Oil Company (now the Mid-Continent Petroleum Corporation) and from 1920-25 served as secretary-treasurer of Bradford Rig & Reel Company. He joined the Southwest Company, a firm of independent oil operators, in 1933.

»

Anthony C. Quast, 53, Tulsa petroleum engineer, died January 8. A native of Greenfield, Ill., Quast was employed by a number of refining companies shortly after he moved to Oklahoma. He opened an office as petroleum engineer in Muskogee, and at one time was district manager of the oil and gas office of the U. S. government at Fort Mason, Calif.

»

R. M. Dinges, vice president of The Continental Supply Company in charge of the New York office and foreign operations, died December 31 in New York City. Dinges joined Continental organization 24 years ago in Virgil, Kansas. In 1927 he was transferred to the company's foreign division and, at various times was a representative in Venezuela, Roumania and London, England. During the war he was on leave of absence as an executive with the PAW.

»

Fay Hulsey, 51, of Humble, Texas, production superintendent of Trader Oil Company, died January 5 of injuries suffered in an oil field accident.

»

Morris S. (Steve) Rhoads, 54, producer and co-owner of Farrell Drilling Company, died January 4 at Fort Worth of a heart attack. He was a native of Pennsylvania, and had engaged in the oil business 36 years.

»

Robert R. Grandin, 50, Bristow, Okla., independent drilling contractor, died January 5 of a heart attack. Grandin was active in the Bristow and Slick areas during the oil boom days and for the past ten years was a contractor with a well-pulling unit in the McPherson, Kansas, area.

»

William F. Harrison, Sr., Tulsa, retired independent oil man, died January 4. He had lived in Oklahoma since 1912, and was active in oil fields around Tulsa. He was a native of Milton, Fla.

»

O. B. Perot, 54, East Texas oil producer and an insurance executive, died January 2 at Waco, Texas, where he had resided 21 years.

Harry Wilson

M. L. Walraven, Jr.

Kobe Shifts Management of Texas And Mid-Continent Sales Offices

Kobe, Inc., has announced a shift of management of its Texas and Mid-Continent sales offices. Harry Wilson, formerly manager of the Oklahoma District, has been appointed Northern Area sales manager, with headquarters in Tulsa, where he will direct the sales and technical activities of the company in Oklahoma, Kansas, Nebraska, Illinois, and the Texas Panhandle. M. L. Walraven, Jr., former sales manager of the Northern District, will take over the management of the Southern Area sales office, with headquarters in Dallas. Walraven will be in charge of the company's activities throughout Texas, Louisiana, Arkansas and New Mexico.

In their new positions, they will continue under the direction of R. G. Ralph, Division Manager, in Oklahoma City.

Foreign Service Jobs Completed By Houston Oil Field Material

The cutting and fishing tool department of Houston Oil Field Material Company, Inc., has completed several foreign service jobs. Operators and emergency equipment were carried by air in each case. Among recent expeditions were an emergency fishing tool job at 11,000 feet for The Superior Oil Company of California in the Bahamas. Eighteen hours lapsed between receiving of the call in Houston and arrival of the HOMCO operator on location. Other jobs have been handled for Colombian Petroleum Company and Socony Vacuum Oil Company in eastern Venezuela.

International Harvester Leases Arizona Tract to Test Equipment

Leasing by International Harvester Company of 1920 acres of land near Phoenix, Ariz., as a site for experimental testing activities of industrial power equipment, was announced by H. T. Reishus, general manager of the company's Industrial Power Division, Chicago.

The land, formerly used by General Motors as a tank-testing site during the war, is approximately 23 miles from Phoenix, south of South Mountain. It has been leased for a period of five years from the Arizona State Land Department.

The area will be used as a testing ground for International Harvester's line of industrial power equipment. In addition several makes of allied industrial equipment such as bulldozers, scrapers, and heavy earth moving machines used in conjunction with Harvester's line, will also be tested.

A permanent working force of International Harvester industrial engineering personnel will be assigned to this operation.

Jones & Laughlin Supply Opens Oklahoma City Sales Office

Jones & Laughlin Supply Company is opening an uptown sales office in the Kerr-McGee Building, Oklahoma City, to operate in conjunction with its store in the same city. City sales will be handled by W. J. Whatley.

The Oklahoma City facilities are a part of the Jones & Laughlin Central and Southern Oklahoma District, operated under the supervision of L. R. (Mike) Roberts, district sales manager, Wewoka.

North Equipment Company Buys Houston Tract to Erect Plant

North Equipment Company, Inc., Houston, has purchased a 2¾-acre tract which will be the site of a modern oil field equipment plant expected to cost approximately $100,000. The land was purchased from C. V. Shuffard and Paul DeMotte for a reported $10,250.

Officials announced that machinery for the manufacture of heat-treated load binders, forged steel, and a new automatic shutoff valve had been ordered.

Lambert Firm Formed

Organization of the Lambert Corporation, with offices at 1818 Weber Street, Houston, was announced by C. E. Lambert, president of the firm. Paul L. Monroe is vice president; and L. Sexton, secretary. The firm will produce paints and protective coatings.

Charles M. Zerr

Walter Voightlander

Technical Director, Chief Engineer Named by Union Wire Rope Firm

Walter Voightlander, chief engineer of Union Wire Rope Corporation since 1927, has been promoted to technical director, and replaced in his former position by Charles M. Zerr. Both are graduates of Stevens Institute of Technology. Voightlander has been engaged in wire rope technical and research work for 43 years, and has had previous connections with John A. Roebling Company and American Chain and Cable Company. Zerr has been Voightlander's assistant for 12 years.

In the enlargement of Union Wire Rope's technical staff, Raymond O. Kasten was advanced to assistant technical director, Robert C. Downey to research chemical engineer, Omer Brenton to assistant metallurgist, and Dwain L. Bedford to metallurgist in charge of the chemical, physical and metallurgical functions of the engineering laboratory.

Schlumberger Building Planned

A two-story research laboratory building of reinforced concrete and masonry construction will be built at a cost of $75,000 at 2720 Leeland, Houston, for Schlumberger Well Surveying Corporation.

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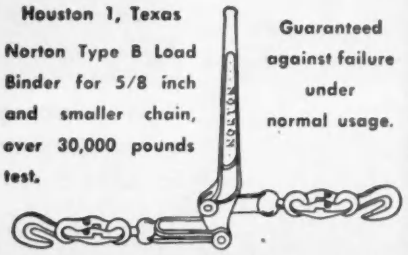

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TRADING POST SECTION

ON PAGE 82 OF THIS ISSUE

AIME to Elect

Election of officers is scheduled for the January 14 meeting of the Gulf Coast Section, AIME, according to Chairman Mercer H. Parks. Positions to be filled are chairman, vice chairman, secretary-treasurer and two directors.

The program includes a talk by E. V. Foran, engineer, who will discuss "Research and Development Progress in the Oil Shale Industry in Germany During World War II." A veteran of both world wars, Foran was with the Petroleum Branch of the U. S. Army Supply Corps. He was a consulting engineer before entering the Army.

Advertisers' Index

EDITORIAL INDEX, PAGE 21

*Indicates detailed information on products and services included in 1943-44 edition of Composite Catalog of Oil Field and Pipe-Line Equipment.

*American Iron & Machine Works Co. 85
*Baker Oil Tools, Inc. 63
*Baldwin-Duckworth Division Chain Belt Co. 12
Wm. M. Barret, Inc. 88
Bethlehem Steel Co. 15
The Bovaird Supply Co. 13
*Buckeye Traction Ditcher Division Gar Wood Industries, Inc. 45
*Cameron Iron Works, Inc. 37
*Cardwell Manufacturing Co. III Cover
*Caterpillar Tractor Co. 3
*Chain Belt Co. 12
*Chiksan Co. 77
*Chrysler Corp. 11
Dan L. Clark Drilling Co. 72
The Colorado Fuel & Iron Corp. 2
*Continental Motors Corp. 41
*Crane Co. 24
*Cummins Engine Co. 14
Dowell Incorporated 20
*Durbin-Durco 88
Ford Motor Co. 60
Ft. Worth Laboratories 83
The Four Wheel Drive Auto Co. 69
*Gar Wood Industries, Inc. 45
*The Garlock Packing Co. 79
George Engine Co. 75
*Gray Tool Co. 56
Gulf Engineering Co. 64
*Helicoid Gage Division American Chain & Cable Co. 81
Houston Laboratories 88
J. H. Howard & Co. 88
*Hughes Tool Co. I Cover
*Industrial Engineer Division Chrysler Corp. 11
*International Harvester Co. 65
The International Nickel Co. 18
J. P. Machine & Tool Co. 80
*Jensen Brothers Manufacturing Co. 78
Jones & Laughlin Steel Corp. 22
Earle M. Jorgensen Co. 79
Keuffel & Esser Co. 79
*King Oil Tools 61
*LeRoi Co. 73
*Link-Belt Co. 1
*McEvoy C. 8-9
*Mission Manufacturing Co. Insert, 52-53
Mudrite Chemicals 88
Murphy Diesel Co. 71
New Bedford Cordage Co. 75
*Norton Equipment Co. 88
*Oil Base, Inc. 6
*Owen Tool Co. 83
Pan American Airways, Inc. 84
Paracut Oil Development Co. 86
*The Parkersburg Rig & Reel Co. 5
*Patterson-Ballagh Division Byron Jackson Co. 17 and 83
Pelican Well Tool & Supply Co. 74
*Penberthy Injector Co. 62
Petroleum Electric Power Association 16
Petroleum Service Co. 84
*The Rig-A-Lite Co. 64
*Rollway Bearing Co. 10
Sandlin Bros. 87
*Standco Brake Lining Co. 88
*Sterling Machinery Corp. 64
*Templeton, Kenly & Co. 63
Thomas Motor Freight 76
Thompson-Hayward Chemical Co. 75
Trading Post Section 82
*Tretolite Co. 4
*Tuboscope 7
*W-K-M Company, Inc. 19
Walter Motor Truck Co. 55
The Weld Inspection Laboratory 88
*Wickwire Spencer Steel Division The Colorado Fuel & Iron Corp. 2
*Wilson Manufacturing Co. II Cover
Wyatt Metal & Boiler Works IV Cover
The Youngstown Sheet & Tube Co. 42

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